‘The Forgotten Element of Coaching’

Exploring modified communication for coaches who train athletes with intellectual impairments

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Abstract

Aims: This study aimed to determine if sport coaches who train athletes with intellectual impairment can learn and benefit from specific communication knowledge, delivered by a Speech-Language Therapist. This involved the development of a modified communication handbook developed based on evidence-based strategies from the field of speech-language therapy. The study also aimed to evaluate the handbook and seek suggestions for further development.

Methods: The research involved four coaches who train athletes with intellectual impairments. Firstly, in the pre-intervention phase, a survey, semi-structured interview, and observations were employed to gather coach demographic and experience information, as well as details about potential communication challenges and opportunities. Secondly, the intervention involved provision of the communication handbook and discussion about the handbook's content. The final, post-intervention phase included the use of semi-structured interviews and an evaluation survey. Interviews were transcribed verbatim and data analysed thematically within and across participants. Observations notes were recorded in real time and reviewed. The data came together to form case studies for each coach.

Findings: The findings demonstrated that no participants had received any disability specific training or had intervention assistance related to supporting communication with their athletes. Participants reported a mostly positive outlook on the use of modified communication strategies. Despite high satisfaction ratings in the overall survey evaluation of the intervention, other qualitative data revealed some misunderstandings or confusion regarding the communication strategies outlined in the handbook.

Conclusions: Participants all commented on the potential value of the modified communication handbook for coaches who train athletes with intellectual impairments. Participants' success in adopting the handbook appeared to be impacted by learning attitudes, personal goals, and existing

coaching pedagogies. This study suggested that specialist communication knowledge such as those provided by Speech-language therapists has the potential to support coaches who train athletes with intellectual impairments.

List of Abbreviations

ASD	Autism Spectrum Disorder
ASHA	American Speech-Language and Hearing Association
ADHD	Attention Deficit Hyperactivity Disorder
APD	Auditory Processing Disorder
CAP	Central Auditory Processing Disorder
CP	Cerebral Palsy
ICF	International Classification of Functioning
ICF-CY	International Classification of Functioning for Children and Youth
NZ	New Zealand
NZAS	New Zealand Audiological Society
NZSTA	New Zealand Speech-Language Therapy Association
SLT	Speech-Language Therapist
TBI	Traumatic Brain Injury
UK	United Kingdom
US	United States
UPIAS	Union of the Physically Impaired Against Segregation
WHO	World Health Organisation

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Introduction

This study takes place at the interface of three fields; disability, sports coaching, and speech-language therapy. This study investigates the innovation of the use of speech-language therapy strategies to enable coach communication for coaches who train athletes with intellectual impairments. To examine the effectiveness of the coach training facilitated by a handbook and coach-researcher discussions, the outcomes will be measured in the interventions value, usefulness, and in the coaches perception of acquired or developed knowledge.

To support a comprehensive positioning of the study it is important to consider background information and relevant literature across the various fields. With these foci in mind, this study begins with a description of communication and models of intellectual disability. This is followed by consideration of specific communication disabilities and the role of speech-language therapy professionals. Examples of several different types of disability that can influence an individual's communication are provided to illustrate the characteristics of athletes indirectly involved in this research.

The literature review then considers relevant research relating to sport coaching research with attention on coaches who train athletes with intellectual disabilities or impairments. As the participants in the study are adult coaches, the review also considers the concepts and processes involved in adult learning. Included in the review are sections such as the role of the coach, coaching disabled athletes, the importance of communication, and the use of modified communication strategies in coach-athlete relationships. These sections are followed by the aims and the research questions that guide this study.

Communication

Human communication involves the exchange of information between two or more people using a variety of modalities such as speaking, gesture, and writing forms (Adler, Rodman & Du Pré, 2017). The communication process includes one person creating and sending a message that is received and deciphered by another person or persons. Human communication is learned through observing and imitating other people during infancy and childhood (Jarvis, 2010). Communication skills continue to be learned as humans mature throughout life.

An ability to communicate enables humans to share our needs and wants with others in order to have these met (Adler et al., 2017). Communication also supports many creative endeavours such as the sharing of ideas, opinions, and facts. The development of connections or relationships with others is also underpinned by communication. Conversely, relationships can also falter or dissolve if communication among those involved is ineffective or destructive.

Communication takes place using language. Languages are the shared symbol systems used by a specific population group (Robb, 2018). These symbols can include a combination of sounds, words, phrases, and sentences, that convey meaning via different rules and expectations of the language. In addition to verbal language, non-verbal aspects of languages and communication can include hand/finger-based sign-language, body movement, and gestures. Even individuals who are unable to speak can still be supported to communicate through adaptations to communication or language systems, and through supported modes of communication.

The notion of communication is at the heart of this study. The focus is on supporting coaches in how they communicate with their athletes who experience an intellectual disability. The intervention component of the study involved presenting a modified communication resource to coaches in order to support their understanding of the communication process, and to help them identify barriers and opportunities to enhance their communication with their athletes who experience an intellectual disability.

Communication Impairment

Communication disability or impairment can involve individuals experiencing either a temporary or permanent impairment in their ability to send and comprehend aspects of verbal and nonverbal communication (American Speech-language Hearing Association [ASHA], 2020). A communication impairment could be related to many aspects of speech and language perception, processing, and production. For example, a child may experience difficulty learning to speak as a result of experiencing persistent middle ear infections, which limit their access to spoken language. This could be considered a developmental communication impairment. In contrast, an adult who experiences a Traumatic Brain Injury (TBI), may experience damage to neural structures involved in language processing, which in turn affects their ability to participate in conversations. This is an example of an acquired communication impairment (ASHA, 2020). Communication impairments can affect individuals with a range of diagnoses, including that of a congenital condition.

The following section provides brief descriptions of some of the common underlying conditions that can contribute to communication impairments. These are provided to illustrate some of the diagnoses of the athletes who were being coached by participants in this study. The intention here is not to empower the use of labelling, but to acknowledge that for some individuals, their disability is a part of who they are. It is understood that disabilities are complex and variable with many internal and external factors and spectrums of ability involved.

Autism Spectrum Disorder (ASD)

Commonly referred to as Autism or ASD, this is a disorder with a wide spectrum of impairment in the areas of behaviour and interests (e.g., repetitive, and unusual), social interaction and communication (American Psychiatric Association, 2013). Communication characteristics can include delayed communication development, and difficulty understanding aspects of conversation such as turn-taking. Although difficult to accurately determine, it is thought that over

50% of people with ASD experience some level of intellectual impairment (Robb, 2018). This may be due to limitations in assessment processes and criteria. Around ten percent of people with ASD are thought to have extraordinary ability in specific skill areas such as music or mathematics.

Down Syndrome

Also referred to as Trisomy 21, Down syndrome is the most frequently occurring human chromosomal disorder. Individuals with Down syndrome often experience a delay in the onset and development of speech and language skills (Robb, 2018).

Attention Deficit Hyperactivity Disorder (ADHD)

People with ADHD experience hyperactivity, impulsivity, and reduced attention spans (ASHA, 2020). Inattention includes, having trouble concentrating, not appearing to listen, starting to think about other things, difficulty learning new things and an inconsistency in task performance. Hyperactivity includes an inability to sit still, being restless and fidgety. Impulsivity includes acting before thinking, and having difficulty waiting for a turn in an activity.

Auditory Processing Disorder (APD)

Also known as Central Auditory Processing Disorder (CAP) is the result of impaired processing of auditory information in the brain (New Zealand Audiological Society [NZAS], n.d). The symptoms of APD share similarities with other types of hearing disorders such as difficulty detecting speech and hearing speech in noisy environments (ASHA, 2020). The estimated prevalence of APD in New Zealand children is estimated at around 6% (NZAS, 2020). APD can affect academic achievement, social interactions, and communication.

Cerebral Palsy (CP)

The term Cerebral Palsy is ‘an umbrella term that refers to a group of disorders affecting a person’s muscle function’ (Cerebral Palsy Society, 2018). It is a permanent life-long condition that

generally does not worsen over time. Cerebral palsy affects people in different ways. The Cerebral Palsy Society (2018) explains the effect on limb movement, muscle control, muscle coordination, muscle tone, reflex, posture, and balance. People with cerebral palsy may also experience impairment to their visual, hearing, and speech development and function (Cerebral Palsy Society, 2018). Some people with Cerebral Palsy also experience some intellectual impairment (Cerebral Palsy Society, 2018).

Dyspraxia

Also known as Developmental Coordination Disorder, Dyspraxia is considered a relatively common neuro-developmental disorder affecting the process of ideation, motor planning, and execution (ASHA, 2020). Dyspraxia is a neurologically based disorder of the processes involved in planning of movement to achieve a predetermined idea or purpose (ASHA, 2020). It can affect all areas of development in children and adults including physical, intellectual, emotional, social, learning and communication.

Traumatic Brain Injury (TBI)

Often caused by violent movement or direct force applied to the head, a TBI involves damage to brain tissue (Mayo Clinic, 2020). A mild injury may affect brain cells temporarily and more long-term complications or even death. The symptoms of TBI vary depending on the location of the lesion and the severity of damage. Many individuals who experience TBI are affected by ongoing fatigue-related challenges in addition to impairment of physical, sensory, cognitive functions, which in turn may disrupt communication abilities (Mayo Clinic, 2020).

Intellectual impairment

The term intellectual impairment has been used to describe people with limitations in cognitive functioning which can also influence their ability in a wide variety of skill areas including self-care and communication (Special Olympics, 2017). People who experience an

intellectual impairment can have trouble developing and using language, reasoning, problem solving, judgment, academic learning and learning from experience (ASHA, 2020).

This section has identified some of the diagnoses of people who may benefit from modified or supported communication strategies. It also identified some of the challenges experienced by the athletes being coached by coach participants in this current study. It is acknowledged that disabilities and impairments, and the terms used to describe these, are not black and white. Though people with impairments have a range of abilities it does not mean they are unable to learn. There are different approaches to utilizing their strengths. It is important to be aware of both their challenges and strengths in order to identify strategies to support their learning, identifying strategies to support individuals' communication needs and development.

Modified Communication

Individuals who experience intellectual disability often experience difficulties communicating with others. This could involve difficult understanding the communication message being directed towards them, or it might relate to difficulty expressing their communication messages effectively. In a sporting context, an athlete's intellectual impairments may present as a barrier to success, due to for example, reduced comprehension of instructions and of discussions about game-specific strategies (Alexandris & Carroll, 1997). Buttimer, and Tierney (2005) also considered the potential limiting social communication abilities which can also hinder athlete participation. Grandisson, Tétreault, and Freeman (2012) suggested that a rehabilitation team could create an intervention plan directed at an athlete's coach to support the coach's skills and confidence when communicating with their athletes with intellectual impairment. Modified communication strategies is an umbrella term used to label multiple strategies that are used to enable communication.

To date, the involvement of Speech-language therapists in coach-directed modified communication training, has not been reported in the literature. Although many researchers have identified barriers to coaching in this population, including communication barriers and a lack of specialist skills to aid coaching (Messent, Cooke, & Long, 1998; Buttimer & Tierney, 2005; Hadin, 2005; Grandisson et al., 2012). Specialists work with people with intellectual impairments in a variety of settings. However, it is not common in some specific areas such as athletes with intellectual impairments or across more general sports, leisure, and recreation settings. This research draws on the knowledge and expertise of Speech-language therapists and exploring modified communication strategies to upskill coaches in their more specific understanding of the nuances of communication.

Key aspects of modified communication include the use of visual communication strategies and support for using language appropriately, including modelling of communication strategies. Without directly identifying the significance of the strategies they used, Grandisson et al. (2012) made special efforts for their intellectually impaired participants to communicate effectively. For example, in the participant interviews, researchers used strategies such as repetition, reformulation, and images. Using these strategies provided an opportunity for individuals with intellectual disability to express their views (Grandisson et al., 2012). Strategies that were observed in this thesis include;

Visual Communication

It is well documented that people with ASD have strengths in visual learning (Whitehouse & Harris, 1984; Bondy & Frost, 2001; Siegel, Minshew, & Goldstein, 1996; Thiemann, & Goldstein, 2001; Minshew, Goldstein, Muenz, & Payton, 1992; Kern-Dunlap, Dunlap, Clarke, Childs, White, & Stewart, 1992; Schopler, Mesibov, & Hearsey, 1995; Quill, 1995). This means that they are more likely to understand the messages conveyed via visual communication. Quill (1997) reported that 'the simultaneous presentation of visual and oral language instruction supports

joint attention, prelinguistic communicative gestures, and receptive language'. Other authors found written visual prompts alone were enough to stimulate change in social interaction with peers (Kamps, Potucek, Lopez, Kravits, & Kemmerer, 1997; Harrell et al., 1997).

Retrieval cueing using pictographic, gestural, or written form, have also supported the children's recollection of language information (Tager-Flusberg, 1991). Graphic schedules have been shown to improve independence (MacDuff, Krantz, & McClannahan, 1993) and written prompts and pictorial cues can aid understanding (Kistner, Robbins, & Haskett, 1988; Rotholz & Berkowitz, 1989). Other authors found written visual prompts alone were enough to stimulate change in social interaction with peers (Kamps et al., 1997; Harrell, Kamps, & Kravits, 1997)

Language Use

Researchers have reported impairments in the appropriate use of language in social and communicative contexts (Tager-Flusberg, 1981; Tager-Flusberg, 1985; Baron-Cohen, 1988). Grandisson et al. (2012) discussed the benefit of adapting instructions to support understanding. Adapting instructions can be as simple as slowing the pace of delivery, increasing clarity and brevity. Similarly, a direct teaching approach, involving clear and brief instructions can be effective (Smith & Green, 2004; Hardin, 2005; Hodge, Ammah, Casebolt, LaMaster, Hersman, Samalot-Rivera, & Satoet, 2009). Literal language use is important due to the challenge for people with intellectual impairments to decipher implied meaning. Literal language use means to use words exactly as their conventional or accepted meanings suggests. For people with Autism and intellectual disability/ impairment understanding of semantic relations or non-literal language can be an area of specific difficulty (Quill, 1985). 'Individuals with Autism have difficulties with non-literal language, such as sarcasm and analogy, among others' (Persicke Tarbox, Ranick, & St. Clair, 2012. p919). People with intellectual impairments may not be able to understand aspects

that are important for social communication such as subtle verbal and non-verbal cues contained in phrases and gestures.

Repetition

Repeating verbal information can support comprehension by listeners (Hardin, 2005). This provides additional information and opportunities for people to understand. The provision of additional time during repetition may also support comprehension.

Modelling

Demonstrations from the coach and other peers in the team as well as physical assistance can also be beneficial tools for aiding understanding (Hodge et al., 2009; Hadin, 2005). Peer-mediated interventions, such as peer modelling have also been successful in the development of social communication in children with Autism (Haring & Breen, 1992; Kamps, Leonard, Vernon, Dugan, Delquadri, Gershon, Folk, 1992; Krantz, & McClannahan, 1993; Wolfberg & Schuler,1993; Pierce & Schreibman, 1995; Sasso, Peck, & Garrison-Harrell, 1998; Spencer-Cavaliere, & Watkinson, 2010).

Video Modelling

Video-modelling is another successful method of social communication training (Charlop, & Milstein, 1989; Hepting, & Goldstein, 1996). It can be used to aid repetition through imagery, visually showing the observer the targeted skill or behaviour.

Understanding the effectiveness of modified communication strategies provides a foundation for the current study. Kotecha (2019) argued that an awareness of an individual's learning challenges, or preferences can support more effective learning. This concept of a modified learning environment approach can enable coaches to adapt and facilitate environments to support better communication between coaches and athletes with intellectual impairment.

Speech-language Therapy

Speech-language therapy professionals are primarily responsible for assessing and supporting individuals' communication needs and development. Known as 'therapists' (NZ, UK, Ireland) or 'pathologists' (US, Australia, Canada), these professionals provide input to support and rehabilitate children and adults who have a range of impairments and needs (NZSTA, 2012). The services that Speech-language Therapists (SLTs) provide include screening, assessment, treatment planning and implementation of communication support strategies and programmes. A key role that SLTs undertake is the provision of education for individuals and families affected by communication impairments and disabilities. SLTs are likely to work with individuals with each of the diagnostic labels from the previous section.

SLTs also work collaboratively with a range of other education and health professionals. Oosthuizen, Klop, and Visser (2016; 2015) researched collaborative and interdisciplinary practice and discussed complementing and overlapping professional roles as well as potential challenges of interdisciplinary practice. Their research emphasised the need for shared responsibility amongst team members (Oosthuizen et al., 2015; 2016). The study included teachers, SLT students and tutors involved in transdisciplinary collaboration that delivered intervention for students experiencing literacy difficulties. The findings showed that all involved found collaboration to be a useful learning experience (Oosthuizen et al., 2015; 2016). Perceived benefits included self-awareness of one's own role and greater insight into the possibility of collaboration with other transdisciplinary team members.

Other examples of SLTs in transdisciplinary literature include Glover, McCormack, and Smith-Tamaray (2015) who investigated collaboration between teachers and SLT's when working with children with speech, language, and communication needs. Glover and colleagues (2015) identified that both SLTs and teachers report a need and preference for increased knowledge. Additionally, both professions valued and wanted increased opportunities for training. However,

perception of need differed between teachers and SLTs. Additionally, Wilson (2016) investigated the relationship between teachers and SLT's in working together to meet the diverse language and literacy learning needs of children. Wilson (2016) discovered similarly to Glover et al. (2015) in that, at times there can be barriers to collaboration due to 'educational silos', limiting abilities to collaborate effectively.

In health practice, collaboration is researched between SLTs and professionals such as nurses. Heritage (2001) explored an inter-disciplinary approach to the assessment and management of dysphagia between SLTs and nurses. Heritage (2001) described this relationship as essential in managing dysphagia (swallowing difficulties), as it enabled a combination of expert dysphagia knowledge (SLT) and holistic personal knowledge of patients (Nurses). Heritage (2001) echoed the theme of partnership and shared responsibilities from Oosthuizen et al. (2016; 2015).

Models of Disability

This section considers several models of disability. The intention here is to differentiate these models and to highlight the models of disability in practice in the New Zealand context. Firstly, the medical and social models of disability are considered. Secondly, examples of contemporary models developed from the Māori philosophy of Hauora (Ministry of Education, 1994). The aim of this section is to provide a wider contextual basis for the current study.

Medical Model

The medical model of disability can also be considered the 'traditional model' (Matthews, 2009). This model highlights disability as a condition that can be 'improved' or 'fixed' and has a focus on diagnosing and labelling (Matthews, 2009). Interpreted at a surface level, the model can imply that individuals with the same diagnosis have similar needs that can be addressed with similar supports or interventions. Townsend, Smith, and Cushion (2015) found criticism of the medical model in that its standards for disability create a 'normal' versus an 'abnormal' dichotomy

and overlook the social construction of ‘disability’ and ‘normality’ (p.82). Another criticism of the medical model is that it is driven by experts which promote ‘fixing’ or ‘changing’ an individual to help them meet societal expectations of normality (DePauw, 2000).

The medical model is still a dominant feature of life, particularly in western societies, including New Zealand. The model is illustrated through our health and education systems and how individuals who experience illness, injury or disability are supported. However, use of this model in relation to individuals with disabilities may perpetuate notions of disability as 'the problem' and continue to stigmatize individuals (Matthews, 2009). Although there are many criticisms of the medical model, researchers have also seen the value in identifying specific impairments, in order to determine the impact on an individual’s wellbeing. The well-being of people with disabilities is also likely to be closely linked with their social context. The appearance and evolution of disability rights movements over the past 50 years have helped increase awareness, advocacy, and support for people with disabilities who are now more likely to be viewed as equal human beings with the same rights as those without disabilities (Pelka, 2012; 2011). Progression has varied from those with a disability that is seen in the physical verses those with an invisible disability such as an intellectual impairment.

Social Models

The social model of disability came into existence via the rise of the advocacy work of multiple disability activist groups. These groups argued that societal pressures of conformity lead to disabilities (Pelka, 2012; 2011). One of these groups was the Union of the Physically Impaired Against Segregation (UPIAS) (Townsend et al., 2015). The disabled activists in the UPIAS voiced their concerns and rights as human beings by highlighting discriminatory aspects present in the medical model. The groups claimed that disability is the result of societies shortcomings in acceptance, accessibility, and beliefs about people (Townsend et al., 2015). Consequently, giving rise to the creation of multiple social-type models under the initial model that primarily suggest

that the causes of disabilities are the limiting beliefs, attitudes, and practices of society. For example, Swain and French (2000) provide this illustration "non-disabled people can generally accept that a wheelchair-user cannot enter a building because of steps (i.e., the person is disabled by barriers in an environment built for non-disabled people)" (p. 570). Similarly, the social model highlights that oppression of people with impairments is due to a 'disabling society' (Swain & French, 2000; Townsend et al., 2015; Matthews, 2009).

Arguably there is a lack of engagement with the social models' understanding of disability in sport, recreation, leisure, and education (Aitchison, 2009; Singleton & Darcy, 2013). The acknowledgment of a social model, centred around the athlete, could create an environment in which participation is more accessible for people. For example, for athletes with intellectual impairments. Oliver (1990) described creating enabling environments that people with intellectual disabilities could thrive in. Coates and Vickerman (2010) reported on successful teachers who personalize their teaching to meet the needs of their students who experience disabilities. This concept was later agreed with, and expanded on, by Ko and Boswell (2013) to include cooperative learning strategies. Darcy, Lock, and Taylor (2017) view the social model of disability as providing a conceptually relevant approach that can enable the exploration of leisure constraints to sports participation for people with disabilities.

There have also been criticisms of the social model of disability. For example, it ignores the role that an impairment has on individuals and their expressed, lived experiences (Shakespeare, 2006; Martin, 2013). Some suggest that the social model ignores an individual's disability entirely. Reeve (2002) argued for the social model concept to be expanded to acknowledge both the structural and psycho-emotional dimensions of disability, like how the medical model of disability does. Reeve (2002) proposed adjustments to the social model suggesting that individuals' identity includes personal experiences of disability and impairment. Darcy et al. (2017) considers that 'removing constraints to inclusion does not automatically create a level playing field' (p.22).

Though there are mixed reviews of the social model, it is becoming more dominant in society today. It is a preferred model for fields such as education because it considers multiple factors of the person's environment. Matthews (2009) stated that increasing the awareness of the social model of disability may enable new routes to inclusion in higher education. These holistic considerations are a part of a move forward in medical and educational sectors.

International Classification of Functioning (ICF) Model

Another contemporary model of disability is the World Health Organization's (WHO) International Classification of Functioning in health (ICF) model (WHO, 2001). The ICF comprises of six considerations in three tiers. The first-tier consideration is an individual's health condition, the next tier includes body functions and structure, activity, and participation. The third tier incorporates environmental factors and personal factors (WHO, 2001). The ICF also has a variation focused on children and youth (ICF-CY) (WHO, 2001). The framework suggests that a change in one component likely contributes to a shift in each of the components and how these interact (Kiuppis, 2018). The largest critique of this model is the time it takes for health professionals to create a more holistic picture and understanding of the person (Castro, Leite, Coenen, & Buchalla 2019). The notion that change in one aspect of someone's life/ health can then influence other areas is also seen in indigenous models of health such as Te Whare Tapu Whā and Whāia Te Ao Mārama (Ministry of Health, 2017). The ICF is an internationally encouraged model through the World Health Organisation. Considered as a holistic health model. This perspective of health aims to enable effective practice through acknowledging both the elements that are limitations and the elements that are facilitators for individuals with disability or impairment. Treatment programs can with more accuracy be established when a person's environment is considered.

Māori Models of Health

The indigenous Māori philosophy of Hauora underpins the Māori models of Te Whare Tapu Whā and Whāia Te Ao Mārama (Ministry of Health, 2017). Hauora considers four fundamental components of contributors to well-being. These are Taha tinana (physical), Taha hinengaro (mental and emotional), Taha Whānau (social), and Taha wairua (spiritual).

In the Te Whare Tapa Whā model, each component of well-being interacts to maintain the whare (house). Whereby the whare is representative of the person. For the house to remain strong it must have equal balance in all components to support an individual's well-being.

Whāia Te Ao Mārama is a model that targets four areas of priority to action for Māori with disability (Ministry of Health, 2017). The four areas are improved outcomes for Māori with disabilities, better support for whānau, good partnerships with Māori, and monitoring and reporting on the implementation of Whaia Te Ao Marama.

Māori models of health are widely discussed and implemented in education contexts in New Zealand, for example, Health and Physical Education in the New Zealand Curriculum (Ministry of Education, 2007). One aim of these models is to redress the inequitable health, education, and well-being outcomes that Māori have experienced and continue to experience today (Hunter, 2020).

Other Models

There are further somewhat more controversial models or philosophies of disability that exist due to various disability movements. For example, the tragedy model, which suggests that one is better off dead than to be disabled (Swain & French, 2000). Swain and French (2000) describe the tragedy model as giving rise to a societal belief and has placed an 'increasing pressure on mothers to undergo prenatal screening and to terminate pregnancies in which a foetal abnormality is detected' (p.572). Models like this do not see the value in the life of people with disabilities instead they see the disability.

There are also some models that are perceived to be more fluid between social and medical constructions. For example, Reindal (2008) proposes the social-relational model which suggests that it is better to conform to the morality of inclusion. Reindal (2008) explains the morality of inclusion as the ability to 'distinguish between personal restrictions in social settings versus social hindrances that are imposed on top of these and which hinder the individual in achieving vital goals'(p.144).

Social inclusion through sports has received increased attention with some disadvantaged groups, though this has not been the case for people with intellectual disability (McConkey Dowling, Hassan, & Menke, 2013). Darcy and Dowse (2013) explain disabilities are a greater issue than the impairment itself. This holistic thinking also recognises that barriers are structural as well as socio-cultural (p.395). These barriers need to expand access beyond the physical and tangible, more broadly they need to support participation, and inclusion. For people with intellectual impairments this access can exist within and beyond the context of sports (Darcy & Dowse, 2013). Darcy and Dowse's (2013) perspective, highlighted that disabilities are a greater issue than the impairment itself. This holistic thinking also recognises that barriers are both structural and socio-cultural, needing expansion of access beyond the physical and material toward broader access, support, participation, and inclusion. Consideration needs to be a given to access beyond the thinking of physical access alone (Darcy & Dowse, 2013). Access needs to be a consideration including but beyond the thinking of physical access (Darcy & Dowse, 2013).

Cronin, Ryrie, Huntley, Hayton, and Hayton (2018), suggests that there is a benefit for sport coaches seeking to embrace the social model where they can work with their athlete to create an appropriate program. Richards (2012) summaries the use of these models in sport and holistic thinking as "what people with disabilities need, as unique individuals with unique challenges, is a physical and social environment that enables them to maximize their potential in their own way" (p. 292). As stated in the introduction section, this research spans the interface of disability, sports

coaching, and speech-language therapy. The following now details the role of sport and sport coaching in the development of intellectually impaired athletes.

Sport and Recreation

Societies are mostly portrayed as a group of people who are connected by geography, a political system, and a sense of a singular identity (Coakley, Hallinan, Jackson, & Mewett, 2009). Cultures are subsets of a society, a group of people who demonstrate a distinct 'way of life' and reflect common values and beliefs (Coakley et al., 2009). Lyle and Cushion (2017) suggest that the sporting culture has a distinct way of life and is socially constructed as a cultural activity that has its own 'cultural identity'. When sport is perceived in this way, it follows that the nature and emphasis of sporting cultures will mediate and socialise members to reflect the nature, composition, values, and beliefs systems in which they are geographically located. Inevitably, this leads to differing interpretations and cultural currency given to sporting codes. In New Zealand, it is largely recognised that sport, particularly rugby, plays a significant role in shaping New Zealand's culture and identity (Volkerling, 2000). With this lens, sport may be viewed as a socialising institution responsible for embedding New Zealand's various cultural values.

A lot of research into the benefits of sport and recreation reflect a role in youth development. For example, Jones and Lavallee (2009) explored how youth sports programs have been designed to facilitate positive youth development. They investigated the life skill needs of nineteen British adolescent athletes. They identified and concluded that sport participation could potentially facilitate the development of interpersonal and intrapersonal skills. Interpersonal skills included, respect, leadership, family interactions, and communication. Interpersonal skills included self-organization, discipline, self-reliance, goal setting, managing performance outcomes and motivation (Jones, & Lavallee, 2009).

Other researchers investigating dominantly positive youth development suggest that participation in sport requires a combination of factors to produce discernible developmental outcomes (Petitpas et al., 2005; Coakley, 2011; Banwell & Kerr, 2016). Naturally, when sport is observed as a socially constructed phenomenon, the nature and emphasis of these organised and recognised institutions will reflect the nature, composition, and geographic locations of the cultures in which they are located. Those that participate in sport and recreation have a distinct cultural identity pertaining to their experiences of it. Inevitably, differing interpretations of cultural importance placed on certain sports will modify the value that is placed upon them at a wider societal level.

Sport and recreation provide benefits for communities. For example, Clark (2008), wrote about how the impact of international events work as a trigger for local development. Clark (2008) described primary benefits and secondary benefits. Primary benefits included alignment of the event with sector and business growth strategies in the city or nation; private-public investment partnerships; image and identity impacts attracting increased population, investment, or trade; structural expansion of visitor economy and supply chain development and expansion; environmental impacts, both in built and natural environments'. Secondary benefits described by Clark (2008) included; post event usages of improved land and buildings; connectivity and infrastructure legacies; labour market impacts and social/economic inclusion; secondary impacts in the property market; global positioning, events strategy going forwards, and project management capability (p.17)'.

The benefits of participation in sport and recreation can generalize to other areas of life such as academic or vocational areas (Roswal & Damentko, 2006; Jones & Lavallee 2009). Jones and Lavallee (2009) explored how youth sports programs have been designed to facilitate positive youth development. Using qualitative research methods, Jones and Lavallee (2009) investigated British adolescent athletes' needs, and which life skills they believe they need and which they

believe are the most important. Nineteen adolescent athletes, 10 coaches, 4 experts in sport psychology and five graduate students (pilot group) participated in a series of focus groups. The need for interpersonal skills and social skills were identified as the most important life skills. Respect, leadership, family interactions, and communication were also noted as important life skills. Personal skills including self-organization, discipline, self-reliance, goal setting, managing performance outcomes, and motivation, were also reported (Jones, & Lavallee, 2009, p.159).

Other researchers investigating dominantly positive youth development suggest that participation in sport requires a combination of factors to produce discernible developmental outcomes (Petitpas, Cornelius, Van Raalte, & Jones, 2005; Coakley, 2011; Banwell & Kerr, 2016). In recognition of the limited knowledge surrounding effective content and strategies associated with positive youth outcomes in sport, Petitpas et al., (2005), reported that coaches who focus on effort, self-improvements, and intrinsic motivation factors create a mastery climate in which young people are most likely to develop life skills and attitudes that will support them in adult life (p.65). However, this development occurs at a time where individuals are beginning to establish a sense of self and that is affected by several considerations including gender, race, culture, and sexual orientation (Petitpas et al., 2005). This can be a complex period of life to navigate.

Coakley (2011) commented that in isolation, the act of sports participation among youth leads to no regularly identifiable developmental outcomes. Rather, outcomes are related to and dependent on combinations of multiple factors that include; the types of sport played; the orientations and actions of peers, coaches, and program administrators; the cultural norms associated with sports or sports experiences; the socially significant characteristics of sports participants; the material and cultural contexts under with participation occurs; the social relationships formed in connection with sports participation, the meanings given to sport and personal sport experiences, the way sport and sports experiences are integrated into a person's life, and the changing definitions and interpretations of sport experiences that occur during the life

course (Coakley, 2011, p.309-310). Coakley (2011) further suggests that without embracing these factors in combination, sport programmes may miss the opportunities for development of youth (Coakley, 2011), and to achieve discernible developmental outcomes requires the implementation of purposeful and considered outcomes as well as strategies and ways of facilitating these outcomes, that is, effective coaching (Banwell & Kerr, 2016).

Banwell and Kerr (2016) investigated coaches' perspectives on the personal development of student-athletes experience through inter-university sport. The study participants all claimed that personal athlete development resulted from their sport participation. They concluded that personal development through sport was best facilitated when coaches incorporated purposeful and meaningful frameworks specific to the athletes' personal development needs.

According to Clark (2008) and Coakley (2011), sport and recreation may also provide wider benefits for communities. For example, international sporting events impact on employment and trigger local infrastructure development. Clark (2008) described these benefits to include alignment of the event with sector and business growth strategies in the city or nation; private-public investment partnerships; image and identity impacts attracting increased population, investment, or trade; structural expansion of visitor economy and supply chain development and expansion; environmental impacts, both in built and natural environments. Other benefits included; post event usages of improved land and buildings; connectivity and infrastructure legacies; labour market impacts and social/economic inclusion; secondary impacts in the property market; global positioning, events strategy going forwards, and project management capability.

In summary, sports can benefit people through development of personal and wider social skills. The facilitation of such outcomes requires specific understanding and organised programs targeting personal and social skill development. Positive outcomes are primarily determined by the experiences of the athletes and the role of the coach cannot be underestimated.

Specifically, in the context of this study, while the benefits of sports, recreation, and leisure activities for people with intellectual impairments may optimistically be similar, there are many obstacles and challenges presented for coaches and athletes with intellectual impairments. When considering the holistic perspective (model), it appears that accessibility issues to sport programmes are far greater than for athletes without disabilities. Therefore, the genesis of this study emanates from the researcher's experiences related to accessibility challenges and a lack of modified and specifically designed programmes appropriate for the population of athletes with intellectual impairment. The following section highlights benefits as well as challenges that have been specifically identified for this population.

Sport and Recreation for People with Intellectual Disabilities

People with intellectual impairments are more likely to be considered 'inactive' compared with people without intellectual impairments (Messent, Cooke, & Long, 1998; 1999; Draheim, Williams, & McCubbin, 2002; Frey 2004). Messent et al. (1998) suggests there may not be enough physical activity choices available to empower adults with learning disabilities to meet the minimum recommendations for activity. Frey (2004) reported similar activity levels when comparing sedentary, inactive non-disabled peers with people with intellectual impairments. Draheim, et al. (2002) reported low levels of physical activity among people with Down syndrome residing in community settings.

Benefits

Athletes with intellectual impairments have benefited by participating in active sports, leisure, and recreation activities by developing motor, social and cognitive skills (Dykens & Cohen, 1996; Gençöz, 1997; Maïano, Ninot, & Erraïs, 2001; Siperstein & Hardman, 2006; Hawkins & Look, 2006). Bartlo and Klein (2011) describe physical activity for people with intellectual impairment as essential to their well-being. Bartlo and Klein (2011) conducted a

systematic literature review that covered eleven articles investigating physical activity programs for individuals with intellectual disability. The length of trainings reported ranged from 6 to 12 weeks. Bartlo and Klein (2011) also 'revealed moderate to strong evidence for positive effects of sport for a person with an intellectual disability including balance, muscle strength, and quality of life' (p 230). Although it was listed as an overall improvement in the four reviewed studies it appeared that the measures of quality of life differed in each of the studies. Bartlo and Klein (2011) also emphasized aerobic training as an integral part of a physical activity program for adults with intellectual disability. Despite the many positive outcomes and benefits, access to sport and recreation opportunities for people with intellectual impairment or disability is often an ongoing challenge (Heller et al., 2004; Bartlo & Klein, 2011).

Supporting people with intellectual impairments to engage in sport, leisure, and recreation activities may have health benefits. Draheim et al. (2002) researched the activity levels of seventy-six men and seventy-four women with intellectual disabilities to help investigate the prevalence of physical inactivity as well as investigating the recommended amount of physical activity in community-based adults with intellectual impairments. Findings included 47% to 51% of individuals with Down syndrome participating in little to no leisure time physical activity and only 42% to 47% of them reporting participation in leisure time physical activity. Draheim et al. (2002) explained that the need for physical activity programs is exacerbated by the low prevalence of adults with intellectual impairment participating in the recommended weekly levels of physical activity. Draheim, Williams, and McCubbin, (2002) stated that frequent participation in physical activity may improve their long-term health, by lowering the risk of coronary heart disease, stroke, and obesity. Participating in activity provides opportunities to develop health holistically through physical fitness, social development in friendship with their families and other athletes, mentally and emotionally through being able to psychologically demonstrate courage and experience joy (Special Olympics, 2017).

Heller, Hsieh, and Rimmer (2004) investigated a group of 53 adults with Down syndrome ages 30 years and older (29 females, 24 males) participating in a fitness and health education program. A group participated in a 12-week exercise and health education programme for three days per week, for two hours. The first hour was used for the exercise class and the second hour was for a health education component. This group was compared to controls. Outcomes of Heller et al. (2004) were measured by attitudes towards exercise (cognitive–emotional barriers, outcomes expectations, and performance self-efficacy) and psychosocial well-being (community integration, depression, and life satisfaction). Results for the training group indicated significant changes in attitudes towards exercise, including increased exercise self-efficacy, more positive expected outcomes, fewer cognitive–emotional barriers, improved life satisfaction, and marginally lower levels of depression (Heller et al., 2004).

Grandisson et al. (2012) investigated the integration of people with intellectual disabilities in sports with their non-disabled peers. A qualitative research methodology involving individual interviews with 20 adolescents with intellectual disability, 20 parents, and 39 rehabilitation staff was deployed. Benefits for participants of Grandisson et al. (2012) were noted in the areas of health improvements, self-esteem development, increased social inclusion, development of motor, social and cognitive abilities and as an opportunity to have fun. Grandisson et al.'s (2012) participants described holistic factors, considering personal and environmental factors and the impact this has on participation.

Further qualitative research has investigated the constraints and benefits for people with intellectual disability/ impairment participating in sports (Darcy & Dowse, 2013). A total of 566 completed surveys were completed by participants who had an intellectual disability themselves or on behalf of, or based on, their experience of a family member with an intellectual disability (Darcy & Dowse, 2013). Using questionnaire formats, Darcy, and Dowse (2013) required short written responses to open-ended questions. Research informants perceived specific benefits

including a ‘sense of achievement’, ‘fun and thrill of competition’, as well as ‘social and psycho-emotional benefits such as opportunities for spending time with teammates’, ‘friends and family, increased wellbeing and to learn and develop new skills’ (Darcy & Dowse, 2013). Darcy and Dowse (2013) reported that participants recounted improvements in the areas of ‘socialisation’, ‘connecting with the community’, a ‘sense of belonging’ associated with ‘building confidence with others’, ‘enjoyment with friends’ and ‘being part of the community like everyone else’(p 403).

Challenges and barriers

Research has identified several challenges and barriers to participation in sport and recreation activities by people with intellectual impairments (Alesi & Pepi, 2017; Darcy & Dowse, 2013). These included the cost of programs, transportation to and from activities, and personal factors such as family influence. Alesi and Pepi (2017) investigated parental beliefs of physical activity engagement in youth with thirteen parents of children with Down Syndrome. It was hypothesised that the more people with Down’s syndrome participated in physical activity, the better they would view themselves and their sense of agency. Participant children were involved in swimming, football, basketball, tennis, dance, and martial arts. Interview data was collected from the parents and analysed thematically. Key findings included a number of environmental and personal factors. Environmental factors involved lack of accessible services and facilities such as gymnasiums or buildings with specialized sport machines that were without organized and unified structural barriers. Personal factors including the influence of parents on athletes with intellectual impairments, the costs of modified programs, a lack of education and information about physical activity, health problems, transport, and independence difficulties were also found to be barriers (Alesi & Pepi, 2017). These findings were consistent with Darcy and Dowse (2013) who also reported transportation challenges; lack of paid carers/assistants or volunteers to enable access and

participation in activities; and the significance of sport activities, to parents and caregivers as they can be seen to overwhelm an often exhausting schedule.

For athletes with intellectual impairments to gain full benefits of sport programs these need to be accessible. One way this can be achieved is by modifying the communication used by people involved in providing the programs, to support both access and participation. In many cases modifying the access to specific programs would allow athletes with intellectual impairments or more broadly, with disabilities, to engage (Darcy & Dowse, 2013). Benefits of sports, leisure, and recreation benefits are recorded in a largely qualitative and testimonial/ experiential from the perspectives of the research participants.

Together findings in this literature review suggest that the availability and accessibility of sport or recreational services or specific adaptive programs are often exclusive and considered difficult to access for people with intellectual impairments (Messent et al., 1999; Heller et al., 2004; Robertson, & Emerson, 2010; Bartlo & Klein, 2011). Challenges included a mixture of personal and environmental factors. Participation is also influenced by parents of athletes with intellectual impairments and the costs of modified programs (Alesi & Pepi, 2017). The skills and confidence of the coach to deliver a specialised program also impact engagement and therefore benefits. For example, Bartlo, & Klein (2011) identified a need for the development of physical activity programs that are adaptable to the needs of individuals with intellectual disability. The ability to adapt and deliver programs rests largely on the coach or facilitator (p.230). Considering the athletes and programs broadly, is of great value for the accessibility of sport and recreational programs that are available for people with intellectual impairments.

Programmes for Athletes with Intellectual Disabilities

Limited sports programs have been created for people with intellectual impairments. Hearing dominantly about those programs for people with physical impairments through the likes

of Halberg and the Paralympics. Few sports programs have been created for people with intellectual impairments. McConkey et al. (2012) undertook a survey of community and voluntary sector groups such as scouts, sports organisations, and youth clubs to determine the perceptions and experiences of sports and clubs regarding individuals with ASD and other special needs. Firstly, McConkey et al. (2012) gathered survey data to; identify past contacts that informants had with children and young people with special needs including ASD; to describe their positive and negative experiences; and, to determine their willingness to enrol children with ASD. Secondly, McConkey et al. (2012) provided a training program focussed on adjusting demands and environments, how ASD impacts people in leisure groups activities and finally training aimed to provide information on sources of advice and guidance. 'Most' participants from McConkey et al. (2012) reported attitudes and perception changes. Perception changes were grouped into four main categories: empathy and insight into the problems the children with ASD experience; actions that they could take to help the child; greater awareness of ASD; and, a need for more patience and understanding (McConkey et al., 2012).

Information on specialised trainings used with athletes with intellectual impairments is scarce. McConkey et al. (2013) stated that social inclusion through sports has received increased attention with some disadvantaged groups. However, these did not include people with intellectual impairments. The same appears to be true in sports, with minimal attention being given in research and specialised programs for upskilling the coaches, specifically those working with athletes with intellectual impartment.

Special Olympics Movement

The Special Olympics movement is one of the few organisations globally that specifically support people with intellectual impairments to become athletes. The Special Olympics movement was designed to promote participation in sports for people with intellectual impairments. It is a

global volunteer-run organization. To participate in the Special Olympics 'Athletes must be identified by an agency or professional as having an intellectual disability' (Special Olympics, 2017). Eligibility for the Special Olympics involves evaluation, by professionals, of the athlete with intellectual impairments, cognitive delays or significant learning or vocational problems due to cognitive delay that require or have required specially designed instruction (Special Olympics, 2020).

The following sections consider literature and research that has touched on the areas of sports coaching, coach-athlete relationships, coach, and athlete learning and the importance of communication. This is relevant to the current study as sports coaches who train athletes with disabilities are the participants involved. The provision of support in the form of modified communication training was the key independent variable in the current study.

Sport Coaches

Sport coaches are the people with expert knowledge, skills, and experience in a particular sport or discipline who provide the support for athletes to participate and achieve the desired outcomes. Coaches perform multiple roles and functions in both individual and team sports. Examples of these roles include, collecting, analysing, and communicating performance data to athletes; planning, implementing, and monitoring training programmes to improve athlete performance; and, planning game strategy and tactics (North, 2017).

An individual coach's style and approach to coaching is unique and personal (North, 2017; Lyle & Cushion, 2017). Beginning with the internal considerations' coaches are influenced by their knowledge, experiences, and beliefs (Law, 2014;2013). Lyle and Cushion (2017) describe the coach's role as being about 'achieving a balance between interpersonal communication and care, sport specificity and context, and performance management marks the coaching process as one requiring an advanced, higher-order occupational expertise' (p.156). Internal constructions are

individual to each coach and there are likely differences in the ways coaches think about both the athletes, the sport or discipline, and the role of themselves as a coach. Coaches face a number of factors and questions that challenge and guide their work. These may relate to their personal interests and styles, recognition of need for, and timing of modification to coaching practices, and presentation of information in ways to support athletes' learning styles. Many of these factors and responses are influenced by coach, athlete, team and organisational goals and resources. The characteristics of the coach-athlete relationship are also likely to influence a coach's approach.

Coaches are role models and mentors who facilitate athlete's learning, influencing them 'on and off the field' (Banwell & Kerr, 2016; Petitpas et al. 2005). The quality of the relationship between a coach and an athlete is likely to be a significant factor in the enjoyment and success of the athlete. The quality of the relationship will also likely influence a coach's current and future participation in the relationship and sport. The following subsection summarises research on the coach-athlete relationship. Specifically, there is a focus on the importance of effective communication and the role of a coach for athletes with disabilities such as intellectual impairment.

Coach - Athlete Relationship

Coaches are role models and mentors who facilitate athlete's learning, influencing them 'on and off the field' (Banwell & Kerr, 2016; Petitpas et al., 2005). The quality of the relationship between a coach and an athlete is likely to be a significant factor in the enjoyment and success of the athlete. The quality of the relationship will also likely influence a coach's current and future participation in the relationship and sport. This subsection summarises research on the coach-athlete relationship. There is a focus on the role of a coach for athletes with disabilities such as intellectual impairment. The importance of effective communication in the coach athlete relationship is also considered.

Coach – Athlete Communication

Communication between coaches and athletes is critical to achieving any desired sporting outcomes (Potrac, Gilbert, & Denison, 2013; 2012). Effective communication requires an individual to listen to messages of others, process this information and then communicate a clear response – one that is received and interpreted as intended (Adler et al., 2017). In a coaching context this will require listening closely to an athlete's communication and then expressing observations, concepts, and thoughts as clearly as possible. Providing verbal communication in a manner that is understandable, engaging and motivating is also likely to support athletes to understand the communication message and put into action any suggestions or requests.

Another approach to considering coach-athlete communication is the notion of communication symmetry (Grunig & Hunt, 1984). Communication symmetry is described as a two-way reciprocal communication occurring between two entities (coach and athlete). Grunig and Hunt (1984) characterized communication exchange by genuine, open-minded, empathetic, and freely exchanged communication. Cranmer and Myers (2015) investigated the concept of communication symmetry with athletes and their coaches. Cranmer and Myers (2015) engaged 158 former high school athletes in a questionnaire surrounding the concept of 'leader–member exchange theory to examine the influence that athlete–coach communication has on relationships and communication with coaches and teammates. They found that athletes who perceived greater symmetry in their communication with their coach also reported a more positive perception of their learning and formed better relationships within their team. However, in the case of athletes with disability, such as intellectual impairments, communication can present a greater challenge. This is especially challenging for coach-athlete relationships if the athlete experiences a communication disability that affects their ability to understand, process and express their thoughts (Special Olympics, 2017).

Coaching Athletes with Disabilities

Coaches work with athletes with disabilities in a range of individual and team sports. These include supporting beginning athletes, new to a sport, through to highly experienced performance athletes. Athletes with disabilities participate and compete in sports from the novice and amateur levels in local communities through to expert, professional athletes competing in international events. Examples of these sports include powerlifting, basketball, football, swimming, boccia and rowing to name a few. Coaching athletes who experience disabilities is likely to include a number of challenges and rewards (Wareham, Burkett, Innes, & Lovell, 2017).

Coaches who support athletes with intellectual impairment play a significant role in the athlete's motivation and continued participation (Shapiro, 2003; Farrell, Crocker, McDonough, & Sedgwick, 2004; Petitpas et al., 2005). Though, Banwell and Kerr (2016) examined coaches' perspectives on their roles in facilitating personal development of neurotypical university athletes, these same outcomes could translate into considerations for athletes with intellectual impairments. These roles included providing modelling and mentoring, building relationships and reflective experiences. Coaches were also noted as facilitating athlete learning as well as their social experiences of team-culture and team environment (Banwell & Kerr, 2016).

Research has identified a variety of barriers that prevent effective coaching of athletes with disabilities (Buttimer & Tierney, 2005; Hadin, 2005; Messent et al., 1999). Most notable, it is that communication-related difficulties and a lack of disability knowledge and accompanying coaching skills that presented the most significant barriers (Alexandris & Carroll, 1997). To help overcome these barriers, Erickson, Bruner, MacDonald, and Côté (2008) reported that coaching of athletes with intellectual disabilities is enhanced through 'learning by doing' and becoming involved in communities of practice with others who support athletes with disabilities (Wenger, 1999; Culver, & Trudel, 2008; Culver, Trudel, & Werthner, 2009).

Coaching has been aligned to educational contexts such as teaching, where professional development becomes an important enabler. Evidence from the teaching profession (closely related to coaching) encourages the use of professional development (Feiman-Nemser, 2001; Hodge et al., 2009; Bebetsos, Zafeiriadis, Derri, & Kyrgiridis, 2013). If we extrapolate into the current research context, professional development is arguably designed to improve understanding, so that people may gain knowledge in pedagogical approaches that best align with coaching intellectually impaired athletes. Several researchers have reported that coaches who train athletes with intellectual impairments believe a structured coaching course would increase their knowledge and skills (Côté, Young, North, & Duffy, 2007; Côté & Gilbert, 2009). Supporting coaches to develop their understanding and learning new skills to more effectively support athletes with intellectual or other disabilities is likely to contribute to positive outcomes for both the coach and the athlete. While the above seems logical and we would generally consider that coaches are always willing to increase their knowledge, this may not necessarily be the case. Stodter and Cushion (2017) and Fyall, Cowan and Galvan (2012) suggest that while coaches possessed significant amounts of existing knowledge, they were often reluctant to assimilate new knowledge. The study identified that new ideas presented to coaches were 'filtered out' or 'rejected' by participants when these ideas did not match or contradicted their existing knowledge, practice, and beliefs (Stodter, and Cushion 2017). The idea of validating existing knowledge by selecting ideas that support existing beliefs and collecting evidence to confirm this existing knowledge, provides challenges. Particularly, for those like myself, who wish to provide professional development opportunities and upskill coaches of athletes with communication disabilities and impairment. In the context of this study, this provides some important epistemological considerations. Therefore, the following outlines my understanding of learning, specifically adult learning, in my provision for teaching and educating adult coaches who, in turn coach and teach adult athletes with intellectual impairments.

Adult Learners

Inherently linked to the idea of knowing and knowledge is the concept of learning, where, as Jarvis (2010) suggests, learning is a lifelong process of development, adaptation, and behavioural change as one experiences and interacts with their environment. In this sense, learning involves; a behavioural change or capacity for behaviour, a temporal component that endures over time and learning also requires experience, interpretation, and interaction with one's environment (Jarvis, 2010; Schunk, 2012).

The environment in which we aim to teach or obtain knowledge can impact our learning and that of the adult student. The term 'environment' can relate to the physical context and interpersonal factors (Jarvis, 2010). This suggests that much learning has an experiential basis (Kold & Kolb, 2005). An important element of experiential learning is reflection of experiences and synthesizing the knowledge acquired through thinking and applying through action. Kolb and Kolb (2005) put forward an idealized learning cycle where the learner goes through the stages of (1) experiencing, (2) reflecting, (3) thinking, and (4) acting - in a cyclical process. Immediate or concrete experiences are the basis for observations and reflections (Kolb & Kolb, 2005). These aspects of the learning environment are particularly important for the coaches who support athletes with disabilities who may also experience communication difficulties, because they have different needs to what coaches are used to catering for.

A relevant model adopted in this study and aligned well to the learning environment of intellectually impaired athletes is Maslow's 'Hierarchy of Needs' (Maslow, 1943). This model depicts personal safety as one of the foundational needs for human beings if to reach optimal self-actualisation. Maslow's hierarchy is often illustrated through the use of a pyramid with different tiers. At the base of the pyramid are the basic human needs of food, shelter, breathing and sleeping. The next tiers include personal safety, then a sense of belonging, self-esteem and self-actualization is the tier at the pyramid's pinnacle. It is important for students to have these needs progressively

met in order to get to the next tier of thinking and understanding. Therefore, the learning environment should always strive to provide a place where basic human needs are met as well as a place that can be safe in times when extrinsic influences may be impacting the learner's ability to perform and engage with learning (Block, 2011 & Healy, 2016). A significant role in coaching adults is understanding how adults learn. Much knowledge exists across a range of disciplines related to professional learning by adults (Stodter, & Cushion, 2017). This knowledge can be used to help understand more about the relationship between a coach/ teacher and athlete/ student.

Considerations of adult learning (Andragogy) can be traced back to Plato's philosophy of education. Contemporary understandings can be attributed to Malcolm Knowles (1984) and Peter Jarvis (2010). In essence, they consider that adult learning has its genesis in the learners; experience, internal motivation, necessity, and readiness to learn and a need for immediacy of application (Knowles, 1984; Jarvis, 2010). Application of adult learning principles requires; the learner's involvement in the planning and evaluation, where experience (including mistakes) provides the basis for the learning activities. Adult learners are most interested in learning things that have immediate relevance and impact to their hobbies, occupational or vocational work and when learning is problem-centred rather than content-oriented (Knowles, 1984; Jarvis, 2010).

Renta Davids, Van den Bossche, Gijbels, and Fandos Garrido (2017) investigated the transfer of learning of professional competences from vocational colleges to the workplace. They identified that an important role of the supervisor was to encourage and support the students' reflection on their own practice by creating a positive atmosphere and offering essential advice and instruction. It was also recommended that the teaching should be student-centred (Renta-Davids et al., 2017). Similarly, Roberts et al. (2017) suggested that connectivity is a particularly important moderator of learning for adult learner engagement. The adult learner has a need for equality and belonging and requires the opportunity to assume some responsibility (Block, 2011; Healy, 2016).

Learning Environment

The environment in which we aim to teach or obtain knowledge can impact learning outcomes. Learning is more than just recalling knowledge it is about the synthesis and analysis of the knowledge presented and this is best achieved in an optimal thinking space (Jarvis, 2010). For example, Kline's (2009) 10 components of an optimal thinking environment provide an understanding of the components that enable an optimal thinking space. The 10 components include attention, equality, ease, appreciation, encouragement, feelings, information, diversity, place, and finally incisive questions, which aim to remove limiting assumptions (Kline, 2009).

Another relevant model related to the learning environment is psychologist Abraham Maslow's 'Hierarchy of Needs' (Maslow, 1943). This model depicts personal safety as one of our foundational needs as human beings. Maslow's hierarchy is often illustrated through the use of a pyramid with different tiers. At the base of the pyramid are the basic human needs of food, shelter, breathing and sleeping. The next tiers include personal safety, then a sense of belonging, self-esteem and self-actualization is the tier at the pyramid's pinnacle. It is important for students to have these needs met in order to come to a higher level of critical thinking and understanding. Therefore, the learning environment should always strive to provide a place where basic human needs are met as well as a place that can be safe in times when extrinsic influences may be impacting the student's ability to perform (Block, 2011 & Healy, 2016).

Learning takes place through transactions between the person and environment (Kolb & Kolb, 2005). This suggests that much learning has an experiential basis. An important element of experiential learning is reflection or experiences and synthesizing the knowledge through thinking and applying through action. There are many factors that influence learning, including learning styles influenced by personality types, educational specialization, career choice, and current job role and task requirements. Kolb and Kolb (2005) put forward an idealized learning cycle where the learner goes through the stages of (1) experiencing, (2) reflecting, (3) thinking, and (4) acting

- in a cyclical process. Immediate or concrete experiences are the basis for observations and reflections (Kolb & Kolb, 2005). These aspects of the learning environment are particularly important for the coaches who support athletes with disabilities who may also experience communication difficulties. The following section considers the area of 'modified communication' which is a key focus of the current study.

Relevance, value, and importance to society

Sports, recreation, and leisure have often been a pathway to social change. In instances of religion, racism, minority groups and now the emerging exposure of people with disabilities. Because sports provide opportunity for equality there is an opportunity for society to see how simple it can be for this different population to engage in activities. This research specifically focuses on Speech-language therapists and exploring modified communication strategies to upskill the coaches in the more specific understanding of the nuances of communication. Although understanding ways to adapt sport have been discussed, these have typically overlooked the concept of communication. Considering the use of adaptive communication and how it can be taught to enable coaches and instructors who train athletes with intellectual and communication impairments should be a primary consideration in coaching athletes with intellectual impairment.

This research set out to explore the current context of coach-athlete communication with some experienced coaches who work with athletes who have intellectual impairments. It also aimed to consider if Speech-language therapy-based knowledge and skills can support communication between athletes and their coaches. This may equip coaches with a better understanding of their athletes and provide a new opportunity for speech and language therapists to support sports coaches in their implementation of communication strategies that will ultimately aid their athlete's comprehension and performance. This research is also an opportunity to uphold

the principles of the Treaty of Waitangi for an underserved group within the New Zealand population. That is partnership, participation, and protection.

The above review of the literature prompts a question about the knowledge, skills and confidence of coaches who train athletes with intellectual impairment. Current literature has no information on speech-language therapists' role in supporting the communication of coaches and athletes with intellectual impairment. This gap in the literature provides the underlying motivation for the current study.

Study Aims and Research Questions

The aim of this study was to determine if disability-specific training with a primary focus on communication knowledge was available to coaches who train athletes with intellectual impairment. Furthermore, the research aimed to see whether implementing a program involving the teaching of specific communication strategies was beneficial for coaches. There has been little research conducted in this area. Drawing on current speech and language therapy knowledge this research aims to consider if a modified speech and language therapy programme can be successfully implemented in a sport, recreation, and leisure context for athletes with intellectual/ disability impairment. With these aims in mind, the research addressed the following questions -

1. What are the coaches' current knowledge, perceptions and experiences with modified communication strategies and supports for athletes with intellectual impairment?
2. What were the coaches' perceptions and experiences of the modified communication handbook?

Methodology

This chapter describes the research design and methodological decisions and processes employed in this study. This includes details of the theoretical underpinnings of the study methodology and the methods employed to gather, analyse, and interpret the data. In summary, this study advocates for a post-positivist, constructivist epistemological view of knowledge and an interpretivist theoretical perspective (Denzin & Lincoln, 2011). As Gray (2014) suggests, this epistemological view suits a case study methodology and aligns with qualitative methods of gathering, analysing, and interpreting data. This is graphically represented in figure 1 below.

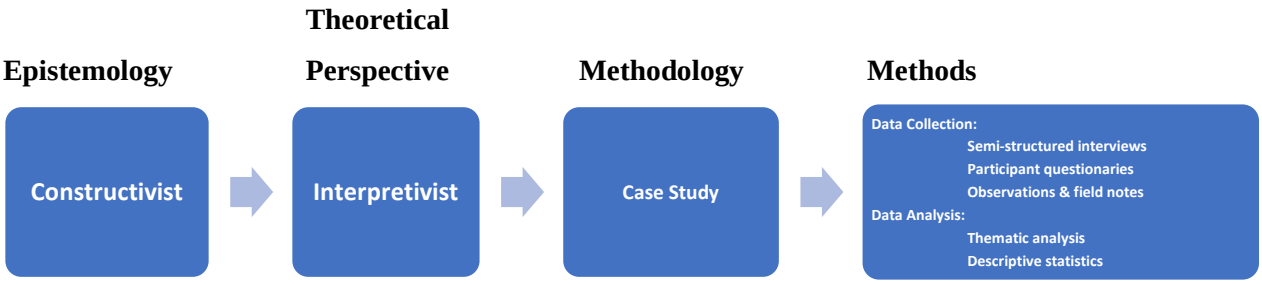

Figure 1: This study's relationship between epistemology, theoretical perspective, methodologies, and methods (adapted from Crotty, 1998).

Research Epistemology

A post positivist constructivist epistemology acknowledges that the participants' prior experiences add to their acquisition and understanding of information and interpretation of the world (Mertens, 2015). A post positivist constructivist epistemology has the belief that each person constructs their view of the world based on their perceptions of it (Trochim & Donnelly, 2008). Participants actively construct their own knowledge and understanding of the world by using prior experiences to interpret and make sense of new experiences (Schuh & Barab, 2008; Trochim & Donnelly, 2008). These prior experiences are stored in an individual's memory as *schema* and are the behavioural responses and thinking processes (also known as *mental models*) that individuals can draw on to organise their current experiences and interpret the environment (Toner & Moran,

2016; Piaget, 1978). This suggests that meaning is constructed individually and in different ways, even in relation to the same phenomenon. Hence, why multiple, contradictory but equally valid accounts of the world can exist (Gray, 2014).

Theoretical Perspective

Closely aligned to a post-positivist constructivist epistemology, the theoretical perspective adopted in this research is interpretivism (Crotty, 1998; Gray, 2014). Interpretivist research can be employed to interpret the beliefs, perceptions, and understandings of multiple participants, and how individuals make sense of new information in similar contexts (Mertens, 2015). Gray (2014) also confirms that in interpretivist research there is no direct, one-to-one relationship between ourselves (participants) and the world (object) and further suggests that the world is interpreted through our individually constructed mental models (schemas).

Research Ethics Approval

Research ethics approval was obtained for this study from the University of Canterbury Human Ethics Committee (Appendix A). Participants were forwarded a study information sheet before the first face-to-face meeting. At this meeting, any questions about the study were answered before participants signed a consent form.

Procedures

This study utilised a qualitative case study methodology. According to Yin (2014) case study is appropriate for an interpretivist inquiry, investigating specific phenomenon including individuals, small groups, communities, or organisations in the ‘real world’. Case study research allows the researcher to gather, explore and analyse, the depth of a wide variety of data, revealing unique characteristics. Problems may be uncovered, subsequent solutions can be suggested

(Mertens, 2015; Yin, 2014). The following section outlines the research procedures and justifies appropriately compatible qualitative research methods employed in this case study research to collect, analyse, and interpret the data.

Recruitment

The coaches were recruited through a local disability sports organisation that supports athletes with intellectual impairments. Permission was obtained from the organisation's management to approach its coaches. An email was sent to potential participants with a brief study outline and the researchers contact details. Using purposive sampling, participants were chosen. This sampling method was used through the application of the following selection criteria. Criteria were (a) experience level (> 5 years with athletes with intellectual impairment), (b) currently active in coaching, and (c) accessible. The coaches with five or more years of experience with athletes with intellectual impairment were selected as it was considered these coaches would have more experience and knowledge of athletes with communication challenges. Participants needed to be active in coaching athletes and accessible (i.e., available and based in the local metropolitan area). Participants were open to their trainings being observed. Local access enabled personal contact for information gathering as well as exchange of ideas. Inclusion was impacted by long lasting effects of the 2011 Christchurch earthquake. Some facilities were still damaged, awaiting rebuild or in a few cases training spaces had restricted time availability and physical access.

Participants

Four coaches who expressed interest in the study met the inclusion criteria. The coaches were involved in football, swimming, basketball, and Olympic powerlifting and weightlifting. There were three males and one female. Table 1 summarises key demographic information about the participants.

Table 1. Coach participant demographics

Pseudonym	Richard	Susan	John	Jerry
Gender	Male	Female	Male	Male
Age	59	59	52	51
Ethnicity	NZ European	NZ European	NZ European	English
How many years coaching sport	40 years	7years	30 years	20 + years
How many years coaching athletes with Intellectual Impairments	20 Years	7 Years	13 Years	11 Years
Any relations or friends	No	Daughter & Family Friends	Nephew with ASD	No, but close trained with them & had neighbours
What sport do you coach?	Basketball	Swimming	Football	Weight-lifting Olympic Powerlifting
Are you paid?	No	No	No	Yes
Did/ do you participate in the sport you coach	Yes	Training not competing	Yes	Yes
Prior Understanding Of modified Communication Strategies	No	Makaton	No	No

Research Setting

The research was conducted in functioning community spaces. Aiming to keep the research located in the 'real world'. The volunteer coaches were met in their natural environment and observations occurred during their regular scheduled trainings. This also supported their comfort and was also important for building rapport and to gain insight into the coach-athlete communication strategies. It also provided the opportunity for the researcher to gain a realistic understanding of the coaches' use of communication strategies both before and after the 'Modified communication intervention'.

Phases

The research involved the following specific phases -

Phase 1: Recruitment. A presentation about the study was given to an organisation specialising in running sports programs for athletes with intellectual impairments. Six days after the presentation, the organisation sent a brief email to those that stated their interest or nominated other coaches (see appendix B). It was decided that there was not enough time left in the season to begin in the current year. In the new year, the coaches who had expressed interest and met the criteria were contacted to discuss the project.

Phase 2: Initial Participant Interviews. Participants were met initially at a location of their choosing (i.e., cafes, workplace, or training spaces). Participants initially completed a background survey for simple demographic information. Following the survey, participants engaged in a semi-structured interview for a background understanding of five areas relating to their experience, knowledge and skills, challenges and opportunities, professional development, and communication understanding (see Appendix D). Questions were rephrased to aid participants with their understanding when confusion was made apparent or when misunderstanding was stated.

Phase 3: Coach observations. These observations involved the researcher observing the coach working with an athlete during a coaching/ practice session. Two of the coaches had two observations and two coaches had one observation before the intervention phase. During these observations, the researcher took handwritten notes related to coach-athlete communication. For example, communication style, vocabulary used by the coaches, characteristics of turn taking, non-verbal communication, and contextual influences on communication. These observations were for triangulation purposes and for a baseline understanding of the coach's communication skills and use of modified communication strategies.

Phase 4: Modified Communication handbook intervention. The researcher developed a Modified Communication handbook for the coaches (see Appendix G). Development of this handbook involved consulting a range of Speech-language therapy resources, developing draft, and seeking feedback from non-specialist individuals on aspects such as readability and accessibility of information. For example, lay people known to the researcher were approached and asked for feedback about the information contained in (see Appendix G for a full copy of the handbook). The final handbook was 41 pages and covered topics such as, communication challenges, the training environment, language use, repetition, visual communication and use of visual systems, and holistic considerations such as social models. Once the final version of the handbook was available, this was then emailed in advance to participants. They were asked to review this prior to the next 'intervention' session. Participants were provided with a hard copy of the handbook. These meetings occurred at a location of the coaches choosing, some chose their home and others chose their training location. At this intervention session, the researcher introduced the handbook and asked the coaches for initial feedback, asked if they had any questions or feedback related to communication with their athletes. Participants were also advised that they could contact the researcher at any time over the following ten to twelve weeks if they had questions.

Phase 5: Post-intervention observation and evaluations. Nine to 12 weeks after the intervention meeting, each coach was asked to complete a follow-up survey that evaluated the handbook information and participated in a final semi-structured interview. Only one participant coach was still in season and able to offer a follow up observation of their support for their athlete. Observation involved the researcher noting communication style, vocabulary, turn taking, non-verbal communication and contextual influences on communication. All four participant athletes completed evaluations of the Modified Communication handbook via semi-structured interviews and survey.

Data Collection

Data was collected by three methods to inform the case study design. By collecting a diverse array of data, the researcher can provide an in-depth description of the case including the context, history, and important events surrounding the case or cases (Lewis-Beck, Bryman, & Liao, 2003;2004). Case study research has compatibility with qualitative inquiry as it is essentially inductive in nature and often grounded in qualitative data collection and analysis (Denzin & Lincoln, 2011; Gray, 2014; Hastie & Hay, 2012). Yin (2010) and Mertens (2015) promote a variety of ways to collect data in case study methodology. These included semi-structured interviews, participant surveys and observation, which are the primary methods of data collection in this study. These are further outlined below.

Surveys

Participants were presented with two surveys. An initial survey before the Modified Communication intervention was introduced and then a follow-up survey after the intervention period. The initial survey consisted of fourteen questions (see Appendix C). This information was

valuable for demographic information related to aspects such as qualifications, experience, number of athletes they train, and basic demographic information (e.g., gender and age).

A twenty item post-intervention survey was used to evaluate the modified communication training and its delivery (see Appendix F). Nineteen of the items used a five-point likert scale (i.e., strongly disagree, disagree, neutral, agree and strongly agree) response to measure participants' attitudes, opinions, or perceptions about the modified communication tool. Different language was used in the questions to explore the topics thoroughly. The survey concluded with a single open-ended question. Participants were given an opportunity to send their responses via email or hand them directly to the researcher. Example items used in the post intervention survey included:

1. Information was relayed effectively, and the researcher kept my attention.
2. The location of the training was appropriate.
3. Your prior knowledge and experience were valued.
4. The researcher was knowledgeable of the subject matter.
5. The material was presented in a way that made it easy to understand.

Interviews

Semi-structured interviews were used in the second and fifth phase of the study. Galletta and Cross (2013) describe semi-structured interviews as incorporating both open-ended and theoretically driven questions, which allows for eliciting data that reveals experiences of the participants as well as data guided by existing constructs in the particular discipline within which one is conducting research.

The preintervention semi-structured interview included five broad topics. These were: (1) experience, and motivation; (2) knowledge and skills; (3) specific challenges and opportunities; (4) professional development; and, (5) communication. Example questions from each topic area included -

1. What inspired you to coach sports?
2. What does modified communication mean to you?
3. What challenges do you face when coaching athletes with intellectual impairments?
4. Have you ever had formal coach training?
5. Are there any specific aspects of communication with your athletes that you would like support with?

The post-intervention interview focused on evaluating the intervention and also the knowledge of the participants. Below are some post-intervention semi-structured interview sample questions:

1. What is your understanding of modified communication strategies?
2. Since the training have you thought about any of the tips/ strategies?
3. What part of the training was least useful?
4. What changes would you recommend for future trainings?
5. Do you see this training as an asset to your coaching skillset?

Observations

Observations consisted of the researcher observing the coaches for the duration of a training session. These ranged from 50 minutes to two hours. The coaches were observed one to three times across the duration of the study. Handwritten notes were taken during these observations to provide insight into how the coaches interacted and communicated with their athletes. These observations enabled the researcher to observe both the strengths and areas of challenges that the coaches experienced. Originally the aim was to undertake both pre-intervention and post-intervention observations. However, due to timing challenges and sports seasons ending, the post-intervention observations were not able to be completed. Only one post-handover intervention observation was completed.

Data Analysis

This study involved collection of qualitative and quantitative data. Descriptive analyses were used for the quantitative data and thematic analyses were conducted on the qualitative data.

Descriptive Analysis

Descriptive statistics are used to describe, summarize, or make sense of data when it is presented in a way that requires a more interpretable form (Creswell, 2008). The quantitative demographic and likert-scale survey data were entered into a Microsoft Excel file to support the analysis. The data helped to describe trends of the participants, their thoughts and perceptions surrounding the usefulness of the Modified Communication handbook and support provided.

Thematic Analysis

Thematic analysis is a method that involves identifying and analysing data in search of recognizable recurring topics, ideas, or patterns of meaning (themes) occurring within the data that provide insight into what is being communicated by participants (Allen, 2017; Clarke & Braun, 2017; and Nowell, Norris, White, & Moules, 2017). Yin (2014) suggests that thematic analysis, as an inductive approach, is compatible with case study design because it enables an in-depth description of the phenomenon and is beneficial in uncovering meaning, developing understanding, and discovering insights that are specific to the research problem. Thematic analysis is specifically applicable to the analysis of interviews and the subsequently documented perceptions, thoughts, and understandings of individual participants who construct an understanding of the world in their own often unique way (Mutch, 2005).

A theme may contribute explicit or implicit information, this means it can be from what was openly sought after or things that were revealed from a place of deeper understanding (Allen, 2017). This analysis is a highly flexible approach that can be modified to cater for this study providing a deep and detailed, yet complex account of diverse data (Braun & Clarke, 2016). The rigorous and repetitious process aimed to give qualitative research data trustworthiness and credibility.

The thematic analysis of this research began with collating interview data and observations. Audio recordings were fully transcribed into MS Word documents with comments added by the researcher to provide contextual support (e.g., where the interview took place and what was happening in the environment). These transcripts were then loaded onto NVivo (version 12) version to aide with the coding process. Once individual participant transcripts were loaded and reviewed broad semantic codes were generated. Further analysis of the semantic codes generated some latent codes (Braun, & Clarke, 2016, p.740). Key themes from each participant were then contrasted with themes identified from other participants' data using a table created on MS Excel.

Validity and Trustworthiness

Ensuring validity and trustworthiness of qualitative data involves criteria such as credibility and transferability of findings (Leavy, 2014). To support the credibility of the current study's data and findings, triangulation was used. Triangulation in research is the use of more than one source or method of data to provide multiple perspectives on a topic or theme (Heale & Forbes, 2013). It is particularly useful when using opinions of people in a case study. Due to the epistemological view of post-positivist constructivism, research measures used in isolation are acknowledged as incomplete which emphasizes the importance of multiple measures such as those used in this study (i.e., survey, interviews, and observations) (Trochim & Donnelly, 2008). The transferability of the findings relates to the size and scope of the study, including the representativeness of the participants.

This chapter has described the participants, procedures, instruments, and data analysis aspects of the study. The following chapter presents the results of the study.

Findings

Introduction

This chapter presents the findings from the study. These are presented as individual cases for the participant coaches. Each case describes the participants' demographic information including their coaching experiences, athletes, and contexts. The initial interview and pre-intervention observation data (including a range of participant quotes) are followed by data from the interviews after presentation of the modified communication handbooks. The chapter concludes with consideration of a summary of the post-survey data and common themes identified across participants.

All participants were aged between 50 and 60 years. They were also from similar ethnic and cultural backgrounds, with three New Zealand European participants and one English participant. All reported a minimum of five and a maximum of 20 years' experience coaching athletes with intellectual impairments. Three of the coaches were volunteers and one was in a paid coaching role. The sports coached were basketball, swimming, Olympic weightlifting and powerlifting, and soccer/football.

Case 1 – Richard

Demographic and contextual information

Richard, a 59-year-old male, had been coaching sport for approximately 40 years. He was a volunteer coach with a history of success in coaching at a variety of levels. Richard is an ex-competitive player of basketball. For the past 20 years, he has been involved with coaching athletes who have intellectual impairments. Richard reported that he did not have friends or family members with disabilities before taking up the role. His coaching season runs for 26 weeks with one, one-hour training and a one-hour game each week during the season. In the team that Richard coaches there were nine members with a range of diagnoses. Despite receiving medical files for

his athletes, Richard remarked, diagnoses reported could be vague. The known diagnoses of the athletes in Richard's team included down syndrome, autism, and developmental delay. Richard reported he was encouraged to take up his coaching role by a friend and former teammate. Richard had a clear passion for coaching and was excited for an opportunity to be challenged and to 'give back' to the sport.

Initial Interview and Observations

The initial observation of Richard's coaching took place on a weekday evening for two hours. Richard's coaching environment was an old stadium gymnasium consisting of two basketball courts, with spectator seating on one side. There was a high level of noise reverberation due to wooden floors and timber panel walls, a curved wooden ceiling. During the observed training session there were 17 athletes on one court, with three other coaches, a student volunteer, and a team manager present. Spectators included parents, siblings, and caregivers.

Richard was observed remaining in close proximity with the athletes, which supported their comprehension of instructions. He also used peer modelling to provide a full group demonstration, before splitting the large group into smaller groups for practice and repetition. Richard used lots of gestures to support his verbal communication (e.g., pointing, eye gaze, and moving his arms). The session was based on a game-centred teaching approach and ended with a scrimmage. Two potential challenges observed during the session where the use of different colour cones to mark out the training court boundaries and the use of sport-specific non-literal vocabulary such as "run the lanes".

Richard was the only participant who reported having some formal coach training, prior to the initial interview. He also expressed an interest in learning more about people with disabilities. In response to the question 'Have you ever had specialized training for coaching athletes with intellectual impairments?', he responded -

> No not really. I mean there is a very basic online training that our organization has but it is sort of more paint by numbers, very low-level training. So good awareness stuff. There have been coaching clinics and things, but I have been asked to take them. The courses have been in a more general sporting sense than anything else. Nothing disability specific.

He also described his knowledge of coaching athletes with intellectual impairments as -

> … I get asked to give talks and the first thing I say is I have got no idea what I am doing. Which is a great sales pitch, but my point is, I do not really treat the athletes like they have a disability. I treat them like I would any mainstream team. If they need sorting out, you get them organized. To me it shows respect to them and the discipline you need as well. Obviously, they have limitations like any athlete, it is still about trying to push someone. With these guys you need the patience and tolerance as well because it is going to take them a lot longer to pick it up, you work things through. But it can be amazing the progress they can make. Other coaches have been my main source [of knowledge]. I have been involved with mentoring and coaching coaches but often my learning comes from watching other games of basketball and seeing what other coaches are doing at the world games. The course I did years ago when I coached both [athletes with intellectual impairments and mainstream]... gave me a regional and provincial coaching ability as well.

When asked about any knowledge gaps he might have with regards to disabilities and coaching athletes with disabilities he stated -

> Understanding more about disability and limitations would be quite useful. I think for others that have come along as caregivers or parents that end up as a coach, it is about getting the balance right with the sports specific knowledge and the understanding.

Richard commented that sometimes communicating with his athletes was challenging -

> Yeah, there are certainly times where you cannot get that break through. And sometimes there is a reason behind it, something that is distracting them. But often there are issues going on in life or it is the medication.

Richard was asked about his existing knowledge and use of modified communication strategies. He responded –

> One key is simple, clear messages. I see it when I go to mainstream, the coaches overloading the athletes. These fancy plays these guys have and most of the time when they go on court, they forget everything.

He also stated -

> I use repetition and simple communication. Visual demonstrations for the more visual types with the ones who need more visual aid. Using the tone of voice as well. I made them all look at me, I make a point of making sure everyone is looking and focused, with that eye contact. It is a matter of being pretty open as well because you can get frustrated pretty quickly.

Based on the observation and interview, a number of potential opportunities were identified to support coach-athlete communication. These included -

1. Potential support from other people present in the session (e.g., team manager, student volunteers, assistant coaches, parents, and caregivers).
2. Providing information to support Richard's understanding of strategies to aid comprehension of verbal communication. For example, occasional verbal instructions were particularly long and often paired with gestures, and at times delivered with the athletes many meters away.

Modified Communication Handbook

The modified communication handbook was emailed to Richard two weeks in advance of an intervention meeting. The researcher gave Richard an opportunity to share his thoughts, ideas, and reflections about the handbook. At the intervention meeting the handbook was talked through with Richard. The researcher related observations of the coaches' strengths and opportunities to the strategies within the handbook. After nine weeks, Richard was then re-contacted to discuss his understanding and use of modified communication strategies. He was asked for his feedback on the handbook and the experience, the meeting took approximately two hours.

Post-intervention interview

Richard expressed that his understanding of communication had extended beyond verbal communication, and now considered the visual methods of communication he deploys during athlete demonstrations. He also reiterated the importance of simple clear language and a need to understand individual needs -

> Relating language that individuals can relate to, and so adapting it to the disabilities that they have. But also, over time the form or the best way to communicate with individuals as well. "I find it is often more visual, showing them how to do a drill for basketball or other times… always comes down to simple and clear language.

In response the following questions about communication and his interaction with team members, Richard indicated that the modified communication handbook had positively influenced his knowledge of communication in particular he reported being more self-reflective about what he said -

> [Using] Literal language. Thinking about if it makes sense…It actually just comes down to consistently saying similar things like 'I need you to run the lanes,' so there has been an

> explanation building up the team of what running lanes mean. And a whole series of drills with that or I need you to be on the baseline.

During the interview Richard also reflected on the parallels between his managerial work role and of his coaching role –

> …I often see that it comes back to forms of communication in the end. You send a memo out to thirty-five people have received it and none of them are doing it they are all stupid basically. Do they not read their memos? but if 35 people do not get it and one person thinks they should have got it where does the problem actually sit? And the same sort of thing in coaching well often if they are not getting it then you need to change the way you are delivering that.

Richard also stated his realization of the importance of communication –

> It is one thing learning the sporting side, but the stuff you have in here [modified communication handbook] is actually more important. The material in the document does not require sporting knowledge to apply it, it is more about the language and body language. That is what I think will be really useful, another angle on coaching that hasn't ever been thought of to a degree…

Richard's participation was characterised by three key qualities shown in reflective practice, a willingness to learn, and organisation skills. Richards' willingness to learn was illustrated in his comments "I am open to suggestions". His organisation made time for questioning and reflecting upon the purpose and application of the strategies. Using reflective practice, Richard could demonstrate clear understanding of the intervention strategies and connect them to previous experiences. There was a strong knowledge foundation and support system for Richard. Experiential learning and observational learning were enabled through these skills.

In summary, Richard is an experienced coach of athletes with intellectual disabilities. Before the introduction of the modified communication handbook, he appeared to use a range of effective communication strategies. Initially 'stumbling' into the use of modified communication strategies. The modified communication handbook provided Richard with additional knowledge, particularly self-awareness of his use of verbal language and how this could be interpreted by the athlete. Richard was also made aware of the basis of the strategies he had been using without the explicit knowledge.

Case 2 – Susan

Demographic and contextual information

Susan was a 52-year-old mother of an athlete with an intellectual impairment. She coached a swimming squad that included 14 athletes. Her role involved providing training sessions for one hour each week during school terms (i.e., 40 weeks per year). Although Susan was not a competitive swimmer, she had participated in swimming for many years in order to maintain her fitness. Her initial involvement in the team was primarily as a team manager. However, over the past seven years Susan had taken on the role of coaching due to a sense of obligation to help, as the previous coach had died.. Susan had never coached non-disabled athletes in sport. She described a broad network and history connecting her with disabilities through her daughter and her family friends. Susan's coaching was provided in a voluntary capacity.

Initial Interview and Observations

The researcher observed two of Susan's training sessions on a weekday evening for one hour per observation. The training environment was an eight-lane, 25-metre swimming pool. The swim team used two lanes in a session. The space is well-lit space, with mostly artificial light. This was noted as potentially challenging for some athletes with visual sensitivities. During the observation session, there were nine athletes present. Susan reported that up to 14 athletes can

attend the training sessions. The indoor pool environment included chlorinated water and humid air. There were also high levels of noise present. The source of most noise was an aqua aerobics class taking place in the other part of the pool for 45 minutes of the one-hour swimming training session. The final 15 minutes of the session was markedly different with coaches able to speak with athletes without having to shout. There was also a wading pool and small children's play pool in the space which contributed to the noise levels. During the observed sessions, another parent and co-coach also gave verbal instructions to the athletes.

During the interview, Susan reported a desire to develop her general coaching knowledge, such as understanding how to better identify and correct swimming techniques. She sought to improve this identified need with an accredited coaching course that she completed during the study. She also mentioned she had no previous specialized training for coaching athletes with intellectual impairments –

> No foundation, I winged it by watching others and seeing my daughter's previous coaches. I have an upcoming New Zealand accredited coaching course [this course is not disability specific].

Susan reported that the athletes "…get a general idea" when she is coaching and that she was aware that only one athlete that she had difficulty communicating with. Despite this Susan, stated that she did not have an immediate perceived need for any additional communication support for the athletes. However, she did express interest in receiving the modified communication handbook. When asked about her knowledge of modified communication she responded, "Images showing them what you want them to do?". During the session, the researcher observed several potential communication-related challenges. These included -

- Susan relied on the use of verbal instructions only (e.g., “Straight into warm up!”) which were frequently delivered in a loud voice to overcome the background noise.
- The co-coach was also delivering verbal instructions at the same time as Susan. Some of these were potentially reinforcing non-target skills (e.g., naming the incorrect actions that athletes were doing).
- At times, athletes appeared somewhat unsure in response to verbal instructions provided.
- The timing of the sessions in relation to the aqua aerobics class.

Potential communication support opportunities the researcher observed included –

- The presence of a co-coach and parents.
- The repetitive nature of the lessons and swimming as a sport.
- Congruence between the use of physical actions and verbal instructions.

Modified Communication Handbook

The modified communication handbook was sent to Susan via email, two weeks in advance of an intervention meeting. The researcher then met with Susan on a weekday afternoon to discuss the modified communication handbook. Susan was encouraged to reflect upon some situations she had experienced in her coaching. Ideas were shared, with the researcher following Susan’s lead enabling them to choose the modified communication strategies they wanted to focus upon. Susan was then re-contacted after nine weeks to discuss the handbook, her use of modified communication and her reflections on communication with the athletes.

Post-intervention interview

Although Susan stated that the modified communication handbook did not influence her communication understanding she did speak positively about the potential of visual communication strategies for her coaching and athletes –

> …with the aerobics on at the same time and how loud that is, the visuals might be something that would help. Yeah, the visual aids are probably a good thing…I am looking at this sort of stuff and thinking probably the visual is going to be very helpful.

Susan also reported changes in the ways in which she and the co-coach worked with the athletes –

> …if [co-coach] and I are both here… one of us will be in the water and one of us will be out of the water… doing that, you can actually see the benefit.

Susan's understanding of modified communication appeared to broaden from her focus on visual communication before receiving the modified communication handbook. She stated that –

> [it involves understanding] the many different ways that they learn. And different ways to teach depending on the athlete.

Susan also reported that the handbook provided her with –

"…some knowledge on the visual strategies. Yeah, but then I always knew because of the Makaton."

She did report being more aware of the role of communication but did not identify any specific changes made as a result of the handbook.

The main theme recognised in Susan's case is, misunderstanding and confusion. Susan's responses to various questions used to validate and support other responses were often conflicting. These common contradictions of the qualitative data, lead to an indication of perceived subconscious development and partial understanding of modified communication strategies. Susan inconsistent responses challenge validation in the effectiveness of the intervention. Susan did not appear particularly receptive to the intervention.

In summary, Susan was a volunteer swimming coach of athletes with intellectual disabilities. Before the introduction of the modified communication handbook, she appeared to use increased volume to overcome the adverse listening environment of the pool. Although she did not report any specific changes in her coaching because of the handbook, she indicated in the post-intervention evaluation survey a 'strongly agreed' response indicating the handbook was relevant to her team. There was further evidence that her understanding of the role of visual communication had altered. As the only coach to receive an observation post-intervention, her visual communication use was witnessed in session. This post-intervention observation was of the initial trial of the visuals. Ongoing usage of the strategies was not examined over the duration of this study.

Case 3 – John

Demographic and contextual information

John, a 59-year-old New Zealand European, had been coaching soccer (football) for 30 years. John coached a team of athletes with intellectual impairments. They trained for one hour, once each week all year round, except a six to eight week break over the summer. John has been coaching this team for 13 years as a volunteer coach. He began coaching after his son, the team's former coach, had moved away from the region. John reported no prior explicit knowledge of communication strategies preceding the study. He reported having a nephew with autism but stated this did not have any influence on him deciding to coach athletes with intellectual impairments.

Initial Interview and Observations

The researcher observed one of John's training sessions on a weekday evening for one hour. Only eight athletes were present at the observed training. John reported there can be between 10 to 16 athletes at a training session. During this session John coached with the assistance of a student volunteer. The training was conducted outdoors on a grass field. The conditions in the

observed session were pleasant, wind was mild and traffic noise was largely suppressed by a surrounding belt of trees. Initially, the environment was quiet, allowing John to effectively project his voice across the field. No other teams trained on the surrounding fields. The environment did experience some noise pollution as the training progressed, as five young children arrived at a park nearby. During this time John was forced to increase his voice volume to counteract the effect of the additional noise.

The researcher observed John using strategies that included peer modelling in drill work. Opportunities were recognized for John to expand his use of precise, concise, and clear language. One drill observed had two lines so athletes had demonstrations next to them and in front of them. Drill work is a manner in which to increase athlete repetitions of a skill. John did enable his athletes using direct physical demonstrations (e.g., doing the drill himself for an accurate rendition). The session also had some game-centered teaching approach and ended with a half field game. Two potential challenges observed during the session were the frequent use of verbal language and the use of non-literal vocabulary such as "run it up". John's dominant verbal language approach to coaching was occasionally observed as confusing for his athletes during some of the drills. For example, the following words were observed -

> The first player goes out and around the first cone, goes out around the second cone and back to the start and so on. [the athletes did not appear to understand or act] ...go out, leave it at the first cone, then go back and tag the next person. They go back and tag the next person. They come out and take it to the next one.

John reported to have no formal or disability specific coach training. He suggested that his experience had informed his knowledge. John also had support from a co-coach as well as an athlete's mum who was an experienced and qualified coach. When asked 'how would you describe

your knowledge base when it comes to coaching athletes with intellectual impairment' he stated he had no disability specific knowledge sources however that he had adequate game knowledge.

> My football knowledge is pretty good, I think. I have always been around the game.

When asked about any knowledge gaps he might have with regards to disabilities and coaching athletes with disabilities he stated -

> Small game variations, the lady who helps us out has a lot at home and we just try to adapt them to what our athlete's abilities are.

John's perception of communication challenges with his athletes was behavioural. When asked 'do you ever find it challenging communicating with your athletes?' he responded-

> Yes, sometimes. They might get a bee in their bonnet and they are hard to control, and they do not listen. Not so bad when you have other coaches to help.

When asked about any specific strategies John used to support communication he stated -

> I take them aside one by one, talk directly one by one and have the other coach run them through. I explain it if they are having trouble. I might ask them to watch what the others are doing and get them to see how they are doing it. I tell them to watch the person in front and follow.

This excerpt demonstrates an implicit understanding and use of peer modelling. Factors identified that enabled opportunities to learn and understand the program included use of peer modelling, drill work, repetitions of skills and the use of direct physical demonstrations. Potential support for John included co-coaches, students, and parents. His initial perception of modified communication was "adapting communication to fit the level and the purpose it is supposed to be directed?"

Modified Communication Handbook

The modified communication handbook was emailed to John one week in advance of the intervention meeting. The researcher gave John an opportunity to share his thoughts, ideas, and reflections about the handbook. Unfortunately, due to annual leave and a workplace injury on his return John had not had the opportunity to prereview the handbook prior to the meeting. At the intervention meeting, strengths and opportunities were discussed, and potential strategies were identified. John was encouraged to reflect on his coaching, with the feedback given. The use of demonstration was discussed as well as using direct physical demonstrations to aid the athletes with their understanding of the drill or skill. Peer modelling was encouraged to demonstrate, and gauge athlete understanding of the drill or skill and as a method of repetition. After 12 weeks, John was able to meet to share his understanding and use of modified communication strategies. He was asked for his feedback on the handbook and the experience.

Post-intervention interview

John identified that his understanding had changed. He stated the value of "showing more than the telling". He stated that the strategies in the handbook could enable "less frustration for athletes and coaches" by placing himself in the shoes of the athletes. John provided feedback around the delivery of the program believing it would be beneficial to have a more "hands on approach". John commented that he enjoyed receiving input and feedback, but more modelling and demonstrations from the researcher would have improved the experience. John also commented that modified communication strategies were-

Adjusting strategies to suit the abilities of people you are trying to communicate with.

John also reported that he now understood there were a wider variety of ways to communicate with his athletes and that he had consciously considered better ways to communicate with them.

This included John reporting less use of a raised voice. In response to a question about any changes in the way he thought about how his athletes learn, John commented -

> It has changed. Probably with the showing more than the telling walk through the thing before we do it.

Confusion and misunderstanding were also identified as themes in John's case. Responses across the qualitative data revealed inconsistencies. John shared that he did not consider the program relevant to his team. However, he also stated the program was fairly relative and rated an 'agreed' on the post-evaluation survey question asking if the handbook was relevant to his team. In the post-intervention survey John also stated that he considered the training relative and could not identify areas for improvement other than being more 'hands on' to demonstrate and give feedback to the implications of the strategies.

In summary, John was a volunteer soccer (football) coach of athletes with intellectual disabilities. Before the introduction of the modified communication handbook, he appeared to rely heavily on the use of verbal language. Although John displayed some pre-existing use of modified communication strategies, he reported his knowledge of communication had developed, with increased understanding of non-verbal communication strategies.

Case 4 – Jerry

Demographic and contextual information

Jerry, a 51-year-old male of English heritage, had been coaching for 30 years. He was an elite level weightlifter and powerlifter, and still actively trains and participates in the sport. Jerry had been coaching athletes with intellectual impairments for 11 years. He reported no family members with a disability; however, he did have family friends with disabilities. From around age 10, Jerry reported training alongside athletes with intellectual impairments in a unified training

environment and had a specific interest in coaching athletes with intellectual impairments. Jerry was in a paid role and trained five athletes with intellectual impairments. He also coached other athletes from various mainstream teams alongside them. Coaching is provided all year round, with two hourly sessions on three to five days each week. Jerry reported no previous knowledge of modified communication strategies.

Pre-Interview and Observations

The initial observations of Jerry's coaching involved two, two-hour sessions on a weekend morning and the second took place on a weekday afternoon. Jerry's coaching environment included non-disabled athletes and athletes with intellectual impairment. The room had freezer panel walls and a wooden floor, with a large gymnasium next door. There was a high level of noise and reverberation due to weights landing on the wooden floors and occasionally due to gym classes next door playing loud music. During the observed training sessions there were 17 male athletes present in the first, and 14 male athletes in the second session. There appeared to be a positive culture amongst the athletes regardless of their abilities. A co-coach, some parents and caregivers were also present during both training observations.

Challenges observed by the researcher included the coach giving multiple athletes instructions simultaneously. Despite this challenging navigation of multiple instructions in a small space, the athletes predominantly understand when instructions were not directed at them. Sports-specific language was identified as something that could challenge some athletes. Athletes were observed 'skipping sets' from time to time as there was a high ratio of athletes compared to the coach all working on different sets. Another challenge was Jerry reinforcing negative skills. Excerpts from the observation show how negative skills were potentially being reinforced-

> Look up [athlete name], finish pull, look up, finish pull, looking down today [athlete name], you are looking down.

Olympic powerlifting and weightlifting is naturally conducive to engaging communication opportunities. This includes both the repetitious nature of training activities and the modelling provided by peers throughout the gym. John was also observed using clear verbal instructions often pairing them with an indirect physical demonstration such as, “elbows up”.

Jerry reported that he had no specialized training for athletes with intellectual impairments nor any formal coach training qualification. When asked about his knowledge sources for athletes with intellectual impairment Jerry commented that he had “nothing, life education”, “no” [coach training], “no” [sources of knowledge], “no” [specialized disability training]. He stated that although he perceived his knowledge as “pretty good” he was receptive to new ideas and approaches. He identified a personal knowledge gap in “working with people with special needs” and thought “a social course of some sort” would benefit his work. Close friends, family, and caregivers of his athletes were reported by Jerry, to have aided his understanding of working with athletes with intellectual impairments. Jerry described his supports as -

> My club, people who have been with me for a very long time. Parents as well and caregivers must stay for behavioural checks. But there is no inter-coach communication in the organization.

Jerry recognized that there were communication challenges with his athletes “when their speech is not too good, communication through text messages is easier sometimes.” He also appeared to perceive communication breakdowns and challenges with the athletes as behavioural in nature. Referencing his utilization of parents for advanced warning for ‘communication issues’. He stated -

> Parents give warnings, sometimes there are arguments and fall outs, when they have an attitude...I listen [to the athletes], make sure I fully understand if it is important. Use their body language I can tell straight away if they have not had food or too many coffees.

Jerry's initial understanding of modified communication identified some specific strategies such as using visual supports.

Modified Communication Handbook

The modified communication handbook was emailed to Jerry three weeks in advance of an intervention meeting. During the 20-minute meeting, the researcher gave Jerry an opportunity to share his thoughts, ideas, and reflections about the handbook. Jerry reported that he had not had the opportunity to prepare for the meeting. At the intervention, meeting the handbook was summarized. Strengths and opportunities were discussed, and potential strategies were shared. After 10 weeks, Jerry was able to meet and share his interpretation and use of modified communication strategies. He was asked for his feedback on the handbook and the experience in a quick block between his coaching sessions. The importance of routine and repetition were emphasized. Jerry's understanding of his athletes' learning was that "they are copycats". The researcher explained that the athletes are visual learners reiterating the importance of "peer modelling and those visual demonstrations".

Post-intervention interview

At the post-intervention interview, Jerry reported some inconsistent perceptions of modified communication strategies, "I do not know really, I understand it. I do it every day." In response to questions about the modified communication handbook and his communication knowledge, Jerry responded that although it had not changed his understanding -

We thought about the colour use. Been putting up posters in the training environment. Thinking about the peer environment, social community. The routine and the repetition.

Jerry's case demonstrated themes of implicit knowledge as well as confusion and misunderstanding. Jerry's sports were naturally conducive to modified communication strategies due to a high repetition factor, need for direct physical demonstration and routines. Time for Jerry was valuable, and his schedule could not be adjusted to enable time for thorough understanding. Lines of questioning appearing to have a strong 'no' response to the acquisition of communication knowledge in the program, also indicated specific strategies, that is thought was provoked in the training. Jerry's character was highly relational, frequently considering elements of communication as attitude or behaviour focused. Using strategies of listening to understand the feelings and emotions of his athletes and using text messaging for message clarity.

In summary, Jerry was a professional coach of Olympic powerlifting and weightlifting athletes with and without intellectual disabilities. Before the introduction of the modified communication handbook, he appeared excited to learn more about people with disabilities. Despite reporting no specific changes in his coaching and no addition to his knowledge. There was evidence that explicit knowledge had developed, through his expression of strategies such as peer modelling, routines, and repetition. Jerry reported that the value of this training would best assist new coaches and new athletes.

Review of Modified Communication Handbook

This section presents the findings from the post-intervention evaluation of the modified communication handbook and conversations with the researcher about modified communication. These findings are summarized across the participants in table 2 below. Each response was made on a 5-point likert scale (1 – 5).

Table 2. Evaluation of Modified Communication Handbook and Discussions with Researcher

Evaluation Question	Mean Rating
The handbook and discussions around modified communication were relevant to you and your team?	4.25
Information was relayed effectively, and the researcher kept my attention.	4.25
The length of the training was neither too long nor too short.	3.75
I felt that I was respected.	4.50
The location of the training was appropriate.	4.50
Your prior knowledge and experience was valued.	4.50
The researcher was knowledgeable of the subject matter.	4.50
The importance of the subject matter was thoroughly explained.	4.50
The material was presented in a way that made it easy to understand.	4.25
A variety of different teaching methods were used to help get various points across.	4.25
An appropriate amount of time was devoted to each subject.	4.00
After participating in this research, I now feel I have more knowledge of my communication with my athletes.	4.25

I felt I could use the strategies.	4.75
I feel comfortable in performing these tasks on my own now.	4.50
I feel I can contact the researcher if further needs or questions arise.	4.75
I see the value of this knowledge in this field.	4.50

The average ratings were located between ‘Agree’ (4) and ‘Strongly Agree’ (5) indicate the overall perceptions of participants were positive for the introduction and use of the modified communication handbook and support provided by the researcher.

Richard’s responses included 11 ‘strongly agree’ indicating that he valued the experience and had mostly positive feedback about the modified communication handbook and input from the researcher. He did rate some questions lower than other participants (e.g., Jerry) suggesting that he was analytical in his responses. In comparison, Susan provided six ‘strongly agree’ responses. Although at the commencement of the study she suggested that modified communication would not be beneficial for her and her athletes (e.g., “no, I do not need them”), by the end of the study she stated she could see value in this program for “coaching, talking and communicating with others”.

John responded ‘agree’ for all questions on the evaluation. This may have reflected some of the challenges experienced by the researcher in making contact and spending time with him. It is also possible that researcher expectations were not communicated clearly, as he had not taken time to read the modified communication handbook.

Jerry responded ‘strongly agree’ for 13 questions. These ratings were somewhat in contrast with other qualitative data from Jerry. He did not appear to understand the need for the modified communication handbook and his involvement appeared to be influenced by a range of factors. For example, he was involved in more coaching and competition involvement than the other coaches and was potentially under more pressure to train his athletes at a high intensity. Therefore, the time available for the researcher to observe and support the introduction of the modified communication handbook was limited.

Common themes across participants

The thematic analysis of interview and discussion data revealed a number of common themes across participants. These are identified below, along with a brief description and example quotes that illustrate each theme.

Sense of obligation/ pressure to coach

Three of the four coaches, Richard, John, and Jerry reported an obligation to give back to the sport they now coach. Many of the coaches participated in the sport to a high level. They used terms such as ‘dragged into it’ and ‘pulled into it’ when describing how they became coaches. Some also described being put forward to subtly pressured by others.

Experiential and Observational Knowledge Sources

The coaches reported ‘no’ knowledge sources for coaching athletes with intellectual impairment. When probed they revealed observing and knowledge sharing with other coaches as a main source to their learning. Their knowledge was acquired in a largely experiential manner, in ‘trial and error’ practice. Jerry called this ‘life education’.

Implicit Pre-existing Communication Knowledge

All coaches in this study demonstrated strategies across the pre-intervention phase. Strategies were revealed when questioned about what strategies they use to aid communication. John revealed his use of peer modelling, “I might ask them to watch what the others are doing”. Richard indicated the use of repetition and simple communication. Other strategies were observed during the training. This was identified as an opportunity for the coaches to make that knowledge explicit by connecting it to reasoning.

No Professional Support

Although the coaches perceived they had some professional assistance none had received support from members of a multidisciplinary educational or medical team. Support was largely voluntary from students. All the coaches had access to an assistant coach or a co-coach and identified the support of care workers and parents. Jerry shared his connection to professionals “personal trainers, NZIS, carer support workers, and my mother who is a psychotherapist”.

Connection to People with Disabilities

All participants were connected to disability through friends, acquaintances, or families. Susan’s main reason for picking up the role was so that her daughter could continue to train. John had a nephew with autism but did not perceive this had an influence on his decision to coach. Jerry grew up around neighbours with disabilities and trained alongside people with disabilities from the age of ten and considered them friends.

Reliance on Verbal Communication

Prior to the intervention the coaches had a dominant use of verbal communication. Relying on raising their voice to compete with noisy environments. The coaches had not been educated on the benefits of visual communication strategies. Using other verbal methods to try and compensate

for misunderstandings. For example, John commented “I take them aside one by one and talk directly”.

Non-literal or Sports Specific Jargon

Another challenge observed for all the coaches prior to the intervention. The example for understanding literal language in the handbook (Appendices G) was discussed with Susan, and she commented “That is probably something my lot would do”. Richard took particular interest in this point identifying challenging terms for athletes such as “run the lanes” and reflecting upon the meaning of terminologies used in training.

Reinforcing negative skills

The final communication challenge identified across participants was negative reinforcement. Observed in Susan’s training session with feedback including “not racing”, “I do not want to see windmills”. Jerry’s session also had an example of this, “look up, look up! You were looking down”.

Misconceptions about Modified Communication

Prior to the intervention, participants appeared to have some misconceptions about modified communication. Two participants reported that it was about “visual communication”. John and Richard described it as “…adapting or modifying the level of communication, saying to use simple and clear messages.”. There did not appear to be awareness of the breadth and variety of communication and how communication could be modified.

Athletes as unique individuals

Participants’ comments appeared to reflect their views of their athletes as unique individuals. For example, Susan commented “There are many different ways that they [athletes with intellectual disabilities] learn. And different ways to teach depending on the athlete.”

Communication difficulties viewed as a behaviour issue

All four participants reported some difficulty communicating with their athletes. Communication to the researcher that, sometimes you *"cannot get the breakthrough".* None of the coaches considered their own communication styles or characteristics as the cause of a communication breakdown. They were more likely to describe communication difficulties and communication breakdowns as some form of environmental or behavioural issue with the athlete. For example, due to reasons such as medication changes, laziness, sleeping patterns or issues at home. Richard stated "…and sometimes there is a reason behind it, something that is distracting them. But often there are issues going on in life…". John stated "…they might get a bee in their bonnet and they are hard to control, and they do not listen."

Perceived Need for Communication Training

Participants agreed that there was potential need for disability specific training. No coaches involved in this study had disability specific training. Reporting limited disability specific knowledge. Richard reported the intervention as an asset to his coaching "and for a wider audience as well, the organization nationwide". Susan reported the value of the information being for "…coaching, talking, and communicating with others." John described a benefit of "…less frustration for athletes and the coaches. Realizing how they view our communication." Jerry thought the intervention would be an asset, "probably to people that are starting out…probably not at a national level with athletes or the coaches".

Further Development of Modified Communication Handbook and Support

Participants were asked to provide the researcher with specific feedback about development of the modified communication training and support. Although three participants were satisfied overall with the training, two participants (Jerry and John) stated that it would be more beneficial if the researcher could have been 'a little more hands on'. Jerry reported that the

training ‘was good, backing up what [he] was doing.’ Richard, in consultation with his daughter (an Education professional) provided a thorough analysis listing six areas of specific improvements for the modified communication handbook. These were -

1. **More information about Te Whare Tapu Whā model**. Richard stated a need for “more explanation around Te Whare Tapu Whā and the importance of physical activity”.
2. **Clear introduction to the handbook.** “I felt like the content was there. It was just sorting the summary, introduction, and orientation to the document, so it does not jump straight into significant detail on a section.”
3. **Clarification about praise and feedback.** More detail and examples about the types of praise and feedback that can be provided to support reinforcement of target behaviours and skills.
4. **Assessment.** A suggestion to include more follow-up sessions and some form of assessment to gauge the coaches’ understanding and development of knowledge and skills.
5. **Review of handbook formatting.** Richard stated “… I am just sort of fussy around layouts, and you have sort of got bullet points on some...and not on others, so just keep it consistent.”
6. **Use of summary tables.** Richard felt as though it would be beneficial to have a succinct table at the end, to visually map the coaching implications to athletes’ intellectual impairments. He stated “…is it worth having a table at the end with each of the various intellectual disabilities, so you can see right across the whole lot.”

This chapter has described the findings from the study. The following chapter discusses these findings in greater depth and in contrast with existing knowledge about athletes with disabilities and sports coaching.

Discussion

This study set out to investigate the experiences of coaches of athletes who had an intellectual impairment. There was a specific focus on the coaches' experiences, knowledge and skills related to modified communication strategies. A modified communication handbook was developed and presented to the coaches who were then interviewed and surveyed to determine if the strategies in the handbook were beneficial for the coaches. The study was guided by two main research questions. The first research question investigated the coaches' current knowledge, perceptions and experiences with modified communication strategies and supports to coach athletes with intellectual impairments. Three key themes were identified in relation to the coaches' knowledge, perception and supports. There was *a perceived need for communication training, experiential and observational knowledge sources,* and *no professional support.*

Perceived need for communication training. The coaches had limited disability-specific knowledge or access to training opportunities. Richard identified disability specific knowledge as a gap stating, "it would be quite useful to understand more about disability and limitations". Jerry also recognised this as a need for his development "a short social course of some sort, on working with someone with special needs". Although not all participants directly linked this need to the concept of communication. This need was observed in the challenges at training sessions. John identified several challenges but connected these to behaviour, "when they shut off, when they are out of their own routine" or "outside influences, staying up too late on the internet and being tired". John had also observed "memory can be quite challenging, short term memory challenges for one of them". Participants all agreed they had received no specific disability training; half even identified no knowledge sources for coaching this population. Côté, et al. (2007) and Côté, and Gilbert (2009) had the same finding, investigating coaches who train athletes with intellectual impairments. The coaches in the research of Côté, et al. (2007) and Côté, and Gilbert (2009)

perceived a structured coaching course would increase their knowledge and skills. Despite the perceived need for disability specific training identified in this research, the actual knowledge sources were found to be sourced individually through observation and experience.

Experiential and observational knowledge sources. John's experiential and observational learning came from "other coaches, other qualified coaches, watching and picking up on what they do". This was seen in other participants, for example, Susan, "I winged it by watching others and seeing my daughters' previous coaches". These reports are consistent with the findings of MacDonald, Beck, Erickson, and Côté, (2016) which reported that coaches learned by doing, through their experiences and using other coaches as sources of knowledge and development. Stodter and Cushions (2017) termed this observational learning as 'seeing is believing', concerned with coaches' ability to learn new information through demonstration or the practice of others. This need for affirmation through observation of immediate or concrete experiences is the basis for observations and reflective learning (Kolb & Kolb, 2005, p.194).

No professional support. The participants had no direct professional support from members of a rehabilitation or therapy team. No participants reported access to a medical or educational rehabilitation team of professionals such as physiotherapists, occupational therapists, speech and language therapists, orientation and mobility, nurses, or social workers. Jerry reported a personal connection with a psychotherapist through his family and shared that he sometimes consults her when he has challenges with his athletes. Richard too had a connection with a specialist, having an educational psychologist in his family. Whether any professional support would be welcomed by the participants is debatable and would need further investigation. However, as Grandisson et al. (2012) suggested, a rehabilitation team could benefit coaches and their athletes through creation of an intervention plan to support the coach's skills and confidence.

Some coaches were able to identify perceived areas of knowledge and skills that could support their work with athletes. Jerry stated that a "short course on working with someone with special needs or a social course of some sort" would benefit him as a coach. Richard identified "understanding more about disability and limitations" as a gap in his knowledge. He reflected-

> I think for others that have come along as caregivers or parents that end up as a coach, it is about getting the balance right with the sport's specific knowledge and the understanding.

When observing and discussing the coaches' experiences with their athletes, a number of potential challenges to communication were identified. Three main challenges for the coaches were the *reliance on verbal communication, use of non-literal language or sports specific jargon* and *reinforcing of negative skills*.

Reliance on verbal communication. These challenges are consistent with previously identified barriers to coaching in this population, including communication barriers and a lack of specialist skills to aid coaching (Messent et al., 1998; Buttimer & Tierney, 2005; Hadin, 2005; Grandisson et al., 2012). Verbal communication was the dominant mode of communicating used by coaches during observations. This involved them relying on raising their voice to compete with environmental noise. Richard provided a reflection -

> …One key is simple, clear messages, I see it when I go to mainstream the coaches overloading the athletes. These fancy plays these guys have and most of the time when they go on court, they forget everything.

Richard did identify using physical demonstrations as another way to support his verbal communication. Susan's observed trainings revealed some challenges for the athletes in regards to the understanding of words used to communicate targeted action.

Non-literal language or sports-specific jargon. This example was highlighted in the modified communication handbook, and something Richard and Susan reflected on and could relate to their athletes. Richard took this point seriously when discussing 'running the lanes' in basketball. What does that really mean? There were many phrases that are specific to sports and used regularly in the trainings, "run it up", "hands up", "find a man" etc. Quill (1985) shares that non-literal language can be an area of specific difficulty for Autism and intellectual disability. 'Individuals with Autism have difficulties with non-literal language, such as sarcasm and analogy, among others' (Persicke et al., 2012. p919). Helping the coaches recognise their use of such language as well as supporting their abilities in 'checking for understanding' are potential strategies to help coaches develop this aspect of their work.

Reinforcing negative skills. Several coaches were observed communicating in ways that could be perceived as reinforcing negative skills. This occurred when they highlighted the 'negative'. For example, Susan stated, "not racing" and "I do not want to see windmills". Jerry's session included "look up, look up! you were looking down". Stressing the undesired skill is potentially confusing for athletes. In these examples, coaches have been positively reinforcing non-target skills using language repetitions and gestural repetitions (Levy, 2015). Supporting coaches to develop their verbal language as well as their use of modelling through physical demonstration could help here. Hodge et al. (2009) and Hadin (2005) share that demonstrations and modelling from the coach and other team members can be a beneficial tool for aiding understanding. Peer modelling has been a successful strategy for children with Autism in the modelling of actions, skills or social behaviours (Haring & Breen, 1992; Kamps, et al., 1992; Krantz, & McClannahan, 1993; Wolfberg & Schuler,1993; Pierce & Schreibman, 1995; Sasso, et al., 1998; Spencer-Cavaliere, & Watkinson, 2010).

Each coach participant was able to identify strategies linked to communication, demonstrating some *Implicit pre-existing communication knowledge.* Light and Robert (2010) implied that coaches are more likely to respond positively to new approaches when these are aligned with or related to their existing knowledge and skills. Therefore, recognizing that the current coaches pre-existing use of communication strategies provided an opportunity to solidify that knowledge and support the coaches' current pedagogies. Susan demonstrated this when after the discussion about direct physical demonstrations, she was observed getting in the pool with her athletes. When the suggestion was shared with her, she was quick to take it up, but did not credit it to her developed understanding of modified communication strategies. This was an example of 'safe-simulation' process whereby a coach selects or accepts an idea or suggestion that supports their existing beliefs (Cushion, 2013). Again, connecting to Stodter and Cushion's (2017) 'seeing is believing' concept. If coaches can see the benefits of the relevant material in practice, it becomes more concrete and coaches are more likely to integrate it. This need for validation of new techniques was highlighted by John and Jerry, who thought the program would benefit from being more 'hands on'. As neither of these participants had thoroughly explored the handbook it indicated that perhaps their learning would benefit from a more pragmatic approach.

Before the introduction of the modified communication handbook, participants were asked for their knowledge and experiences of modified communication. Modified communication is an umbrella term used to encompass a variety of strategies used to enable communication access. John and Richard described it as "…adapting or modifying the level of communication…saying to use simple and clear messages". There did not appear to be explicit awareness of the breadth and variety of communication and how communication could be modified.

The second research question guiding this study related to the coaches' perceptions and experiences of the modified communication handbook as well as influence on their coaching.

Overall, participants were positive about the perceived value in the strategies provided in the handbook and potential benefits of input from a speech-language therapist. However, participants did appear to misunderstand or be somewhat confused by the information in the handbook. There were also some persistent misconceptions about modified communication. All the coaches were willing to engage in future training from a Speech-Language Therapist and the modified communication was rated positively in the post-intervention evaluation survey. Although these results appear positive, some responses were not so favourable. When asked if the participants considered this training an asset to this skillset, Jerry suggested the training was better suited "to people who are starting out" adding "probably not at a national level with athletes or coaches". All the coaches stated that they are more knowledgeable and think more about how they communicate with their athletes.

It appeared that John and Jerry reflected upon points discussed in the intervention meeting but did not further explore the strategies provided in the handbook. They potentially may have benefited from more time to consider the strategies, including hands on modeling of these. As well as seeing if the strategies had any effect on their athletes' performance. Stodter and Cushion (2017) found their coach participants tried out new knowledge, then rejected or adapted it several times over. If their athletes' results were satisfactory, they adopted it as part of their 'tried and tested' practice repertoire (Stodter & Cushion, 2017). In the current study, the researcher may have fallen into naive constructivism (Prawat, 1992). Whereby, faith was placed in the ability of the participants to consider the new information and structure their own learning in effective ways (Windschitl, 2002).

Before the introduction of the modified communication handbook, communication challenges were perceived to be behavioural challenges. After the provision of the handbook, the coaches appeared to highlight the individuality of the athletes and recognised a variety of tools

that could be used to support communication and athletes' access to the training. The coaches were able to describe the methods and some participants could also state the rationale for specific strategy use.

After the introduction of the modified communication handbook, participants' comments suggested that they had a greater appreciation of athletes as individuals who have different communication needs. For example, Richard described modified communication as "relating language that individuals can relate to". Susan commented "there are many different ways that they [athletes with intellectual disabilities] learn. And different ways to teach depending on the athlete". John highlighted his consideration of individuals through "adjusting strategies to suit the abilities of the people you are trying to communicate with". Adjusting strategies to cater for individual's links to Kotecha's (2019) perspective of being aware of an individual's learning challenges. This awareness may support more effective learning. From a cultural perspective, honouring the coaches and people with intellectual impairments through the Treaty of Waitangi through acknowledging the principles of protection, participation, and partnership. In a broader sense, understanding the whole individual connects to the social model of disability as well as in alignment with the Hauora philosophy (Ministry of Education, 1994). Considering multiple contributing factors that inhibit and enhance an individual will ultimately enable participation and access.

It was clear that the coaches in the current study possessed significant amounts of existing knowledge and when a new concept was introduced that was closely linked with previously learned knowledge this helped to reinforce their understanding (Stodter & Cushion, 2017). Richard's willingness to learn saw him being open to new suggestions and opinions. The training appeared to align with his desired outcomes for knowledge acquisition. Other participants were not as enthusiastic in their receptiveness to the modified communication handbook. This may be

partly due to the handbook providing generalised information as opposed to being based on the specific needs of each coach (Glover et al., 2015).

Implications for Practice

Although this small-scale study has limited generalizability to others, some aspects may be useful for people involved in supporting individuals with intellectual impairment. Communication is one of the key areas of need for many people with intellectual impairment (Special Olympics, 2017). Therefore, when considering sports, leisure, and recreation engagement for this population of athletes, modifying the communication within those environments should be a priority. The potential involvement of Speech-language therapists in a consultative support process for coach-directed modified communication training in a sport coaching context has not previously been reported in the literature. Many researchers have identified barriers to coaching in this population, some of which allude to communication or a lack of specialist skills to aid coaching (Buttimer & Tierney, 2005; Hardin, 2005; Messent et al, 1998).

Making alterations to our thinking and learning environments through simple modifications to communication could be a step towards increased social inclusion. This could include greater access to sports, leisure, and recreation activities for those with specialised communication needs. The information in the modified communication handbook included simple and practical strategies to support communication (Appendix G). As the participant Richard reflected in his response to identifying the differences between coaching mainstream athletes and athletes with intellectual impairments, “what is more surprising to me is the parallels and what can I possibly learn here to take to the mainstream”. This recognition of learning through his experience of coaching athletes with intellectual impairments and being able to transfer these skills to the mainstream coaching environment show how beneficial it is to address the fundamental skills.

Study Limitations

Several limitations related to participant demographics, study design and focus areas that may have influenced the study are considered here. There was a lack of diversity among the participants. All the coaches were from a similar age group and cultural background. Further specific questions related to the participants' values, learning, or thinking styles, work, and academic backgrounds may have further informed development of coach profiles. The self-directed nature of the modified communication handbook review as another potential limitation. For example, several participants had not reviewed it when met by the researcher for follow-up interviews. This may also have been due to time and demands on these volunteer coaches' busy lives. Some coaches were able to make time available to adequately cover the strategies targeted in the handbook and others were not. Further exploration of participant coaches' fundamental understanding of communication could have helped the researcher develop the modified communication handbook. For example, time should have been allocated for some explanation regarding the meaning of communication and relevant terms.

Similarly, limited understanding of speech-language therapist support was an element that should have been better addressed after the initial interview. Perhaps this would have allowed the coaches a clearer understanding of the purpose and potential benefits of the handbook and researcher support. As well as giving the participants suggestions, pointing out limitations more generally may have enabled the coaches to see the benefits of researcher support. Rather the researcher provided space and time and agency for the participants to use the written prompts in the handbook hoping they would identify the challenges and opportunities. The establishment of roles was not clear and could have been confusing for participants when they were establishing goals for the outcomes of this training. No concrete goal setting was done by the participants.

In giving the coaches autonomy over their learning and trusting they would take initiative was an example of 'naïve constructivism' (Prawat, 1992). This manner of teaching means that learners receive little or no guidance, and the researcher misplaced confidence in the ability of the learner to structure their own learning (Prawat, 1992; Windschitl, 2002). The guidance was minimal in initial phases of the research due to trying to gain a clear indication of pre-existing conditions without tainting the evidence of initial supports and perceptions. With post-intervention follow up sessions restricted due to various circumstances; the conditions may have led to limitations in direction from the researcher. Prawat (1992) suggests a structured way to manage and track the participants. Future research is needed to determine more accurately how the program can be tailored to meet the needs of each coach.

For the post-intervention phases the handbook and survey questions were sent in advance. Two coaches had not read the material prior to the interviews. Their preparation was evident in the responses they provided as they were unable to reflect upon the specifics from the training. Although other questions were sent in advance, ideally, all questions, including interview questions, would have been sent in advance and been read by participants. There was an apparent confusion of the terms communication and learning throughout this research. As such, these topics needed thorough investigation. For example, questions including *'what does communication mean to you*?', '*how do you use communication?'*, and *'what are your views on learning?'*. As Richard explains between his roles of management and coaching:

> There are interesting parallels that exist there, but also, I often see that it comes back to forms of communication in the end. You send a memo out to 35 people and they have received it, yet none of them are doing it, they are all stupid basically. Do they not read their memos? But if 35 people do not get it and one person thinks they should have got it

where does the problem actually sit? And the same sort of thing in coaching well often if they are not getting it then you need to change the way you are delivering that."

There are two elements this statement touches upon in regard to this study. Firstly, how the coaches are delivering the message to the athletes. Secondly, how the researcher is communicating the strategies to the coaches. The inclusion of more observations and conversations with the coaches during the study could have increased the depth of information and supported more change in coaches' understanding and practices. Pre-intervention observations would have benefitted from a post-intervention comparison for training conditions, regarding modified communication strategy use. Some coaches were only observed during one training session. Opportunities were lost in the post-intervention to enable validation through triangulation because participants were not seen for various reasons (e.g., season ending, injuries, and holidays). Participants were also only observed in a training environment and not in a competition or game setting. The coaches communication may vary in a more competitive setting, due to environmental changes. This would have greater enabled understanding the coaches needs for modified communication strategies across settings.

Future Research

This field of research could be further supported by the development of validated measures of the coaches' knowledge, values, and practices. Developed understanding of the foundation of a coach's values and coaching beliefs as well as their understanding of communication and its role in the coach-athlete relationship may provide greater insights into this field. Questions or statements such as *'I felt respected', 'My prior knowledge and experience was valued', 'I felt I could use the strategies',* and *'I saw value in the program'* were used in the current study. Questions and statements such as this, give an insight into the underlying beliefs of the coaches. Further questions could have been used to provide details about the level of use of the new

strategies. Future research could develop understanding on how coaches perceive learning as well as how they perceive their athletes to learn most effectively. This could be done through an assessment, the reflection of participants' practice and evaluating their own teaching.

The role and effectiveness of specific modified communication strategies in adapted environments for people with intellectual impairments is another area for future research. For example, how can adaptive strategies enable access to new or current activities, be it in sport, recreation, leisure, or other environments. This concept of research leads to two avenues of inquiry. Firstly, development and delivery of a training for the use of modified communication strategies to event or activity facilitators such as coaches. Are they able to understand and use the strategies? Can facilitators see the benefits of the strategy use? Secondly, investigating the impact of adapting the learning environment through modified communication strategies from the perspective of people with intellectual impairments. Considerations of how to investigate any benefits and how the individual perceives their effectiveness need to be made.

Similar studies could be replicated to include a more diverse range of coaching participants and a more diverse spectrum of athletes with intellectual impairments. A more formal assessment of knowledge development could be included in addition to interview and observation data.

A final suggestion for future research came from a perception of the researcher that accessibility was hindered by communication and environmental factors. These observed environment challenges appeared to be associated with allocated training times. Further investigation into the often-unfavourable training times could offer suggestions as to why they were given, these times were often unfavourable for neurotypical sports teams. Conditions were different for various teams for example, training time, the day of the week, too much noise. For one team being the only team on the field with no other teams at the training ground had benefits and disadvantages. Benefits of this were limited competing noise. Disadvantages of this are largely

social isolating them from mainstream teams and integrative environments. Investigating the reasons for these unfavourable training times could reveal an embedded societal prejudice.

Conclusion

Coaches who support athletes with intellectual impairment provide a valuable service to these individuals and their families. Supporting these coaches to provide effective communication and support for their athletes is an important aspect that speech-language therapists may be able to contribute to. The modified communication handbook developed as part of this study contained a range of information designed to support coaches who work with athletes who may have communication difficulties. In this study, participants' perceptions of the modified communication handbook were largely positive, and each could report some value in the handbook. The intervention delivery was rated highly amongst the participants in the post-intervention evaluation survey; however, mixed results were seen across the qualitative data sets, with an element of misunderstanding or confusion in regards to understanding the communication strategies or even what communication means for athletes with intellectual impairments. Speech-Language therapists have the potential to provide support for coaches who train athletes with intellectual impairments. Attitudes towards learning new information, personal goals, and existing coaching pedagogies impacted the outcomes of successful participant learning. Richard nicely exemplified the targeted value of the research highlighting a “forgotten element” of coaching among coaches who train athletes with intellectual impairments;

> It is an element of coaching special athletes that gets forgotten. Everyone gets too carried away trying to make people top level coaches, but they simply are not….in the end is actually the delivery, how are you going to do it? it is the language and the way you go about it…. It is all about communicating.

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Appendices

Appendix A: Ethical Approval Letter

HUMAN ETHICS COMMITTEE

Secretary, Rebecca Robinson
Telephone: +64 03 369 4588, Extn 94588
Email: human-ethics@canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Ref: HEC 2018/54

6 July 2018

Kelsey Randrup
Communication Disorders
UNIVERSITY OF CANTERBURY

Dear Kelsey

The Human Ethics Committee advises that your research proposal "Exploring Communication Techniques for Coaches Who Train Athletes with Communication Impairments" has been considered and approved subject to Dr Dean Sutherland editing the appendices (a to k).

Please note that this approval is subject to the incorporation of the amendments you have provided in your emails of 26 June 2018 and 4 July 2018.

Best wishes for your project.

Yours sincerely

pp. R. Robinson

Professor Jane Maidment
Chair
University of Canterbury Human Ethics Committee

Appendix B: Recruitment Letter

Dear Coaches,

I am looking for three to five sports coaches who train athletes with intellectual impairments, to participate in a case study. I am looking for male and female coaches, that have varying experience levels and varying sports.

The study is looking at using communication strategies, typically used in the classroom setting by speech & language pathologists and applying those to the sports coaching context. This will be carried out over a number of months in a collaborative environment. Meaning I will work with you, valuing your experience level and catering a program that is best suited to your team or athlete. There will be three stages, before the communication strategies are integrated, when we are working together to integrate them, and sometime after the integration period.

What is required of you? I will be observing several of your sessions over the duration of the study. You would need to be able to have some time to participate in an interview with me before and after the integration of the communication strategies and finally you would be required to fill out a brief survey before and after the integration of the communication strategies.

All participants will be gifted a voucher as token of my appreciation after the study.

If you are interested in finding out more and possibly participating in the study please contact me via email at kelsey.randrup@pg.canterbury.ac.nz or by phone on 0275524251.

Kind Regards,
Kelsey Randrup
MSc Student
Speech & Language Pathologist

The study has been approved by the University of Canterbury's Human Ethics Committee.

Appendix C - Pre–intervention Survey Questions

Examining communication:

Coaches and their Athletes with intellectual impairments

Pre–intervention Survey Questions

Name:

What is your gender?

Male

Female

Other (please state)

What is your age?

How long have you been a sports coach?

Do you have any formal coaching qualifications? If so, please list these.

How long have you been coaching intellectually impaired athletes?

Do you have any relations or close friends with an intellectual impairment or communication impairment?

Yes/No

How many athletes are involved in your team?

When does your season start / finish?

Start (month) _____ Finish (month) _____

What sport do you coach?

How many times do you train your athletes a week? Days _____ Hours per day _____

Are you paid for your coaching role?

Yes/No

Did you ever participate in the sport you are coaching?

Yes/No

Any comments/ questions?

_____

Appendix D - Pre-intervention Semi-Structured Interview

Examining communication:

Coaches and their Athletes with intellectual impairments

Pre-intervention Semi-Structured Interview Questions

1. Demographic/ Experience questions

i. How long have you been coaching sports?

ii. How long have you been coaching athletes with intellectual impairments?

iii. What inspired you to coach sports?

iv. What experience have you had with people who have intellectual impairments?

v. What experience do you have working with people with intellectual impairments?

vi. What inspired you to coach people with intellectual impairments?

2. Knowledge and Skills questions

i. How would you describe your knowledge base when it comes to coaching athletes with intellectual Impairment (e.g., strong, weak).

ii. What are your knowledge sources for coaching athletes with intellectual impairments?

iii. What supports do you have for coaching your team?

iv. How would you describe your coaching style?

3. Specific Challenges and Opportunities questions

i. What challenges do you face when coaching athletes with intellectual impairments?

ii. What are the differences in coaching mainstream athletes verses coaching athletes with intellectual impairments?

iii. Where or who do you turn to when you have challenges with your coaching?

iv. What support do you have available for learning in regards to athletes with intellectual impairments?

4. Professional Development questions

i. Have you ever had formal coach training?

ii. What are the key sources of coaching for athletes with intellectual impairments.

iii. Have you ever had specialized training for coaching athletes with intellectual impairment? If so where?

iv. Was your training useful? Why?

v. What type of training would you find useful?

5. Communication questions

i. Do you ever find communicating with your athletes difficult?

ii. Have you got any strategies you currently use to aid your communication?

iii. What does modified communication mean to you?

iv. What are some other professions you have had contact with around your coaching role? and, How have they influenced your coaching skill set?

v. To your knowledge what does a Speech and language therapist do?

vi. Would you be open to some aid from a speech and language therapist?

vii. Are there any specific aspects of communication with your athletes that you would like support with?

Appendix E - Post-intervention Semi-Structured Interview Questions

Examining communication:

Coaches and their Athletes with intellectual impairments

Name: Date:

1. What is your understanding of modified communication strategies?
2. Since the training have you thought about any of the tips/ strategies?
3. Have you used any of the strategies?
4. Have you thought about your communication differently?
5. What improvements could be made to the training program?
6. What part of the training did you enjoy the most?
7. What part of this training will benefit you most in the future?
8. What part of this training will be least useful?
9. Were there any topics that should have been included but were not?
10. What changes would you recommend for future training sessions?
11. Is there anything you would have liked to have had more training on? If so, please explain.
12. Do you think this experience changed the way you think about your athletes as learners?
13. Did this experience change the way you think about communicating?
14. Do you see this training as an asset to your coaching skillset?
15. Has this training affected your confidence in anyway?
16. Has this training in anyway effected your understanding?
17. Would you be open to future aid from a Speech & Language therapist?
18. Where can you see the value of this knowledge?
19. Any other comments positive or constructive?

Appendix F - Post-Interventions Evaluation Survey

1 to 5 number scale. 1 being "strongly disagree" and 5 being "strongly agree".

Name: ***Date:***

The handbook and discussions around modified communication were relevant to you and your team?

1	*2*	*3*	*4*	*5*
Strongly Disagree	*Disagree*	*Neutral*	*Agree*	*Strongly Agree*

Information was relayed effectively, and the researcher kept my attention.

1	*2*	*3*	*4*	*5*
Strongly Disagree	*Disagree*	*Neutral*	*Agree*	*Strongly Agree*

The length of the training was neither too long nor too short.

1	*2*	*3*	*4*	*5*
Strongly Disagree	*Disagree*	*Neutral*	*Agree*	*Strongly Agree*

The instructors provided adequate reasoning for the trainings.

1	*2*	*3*	*4*	*5*
Strongly Disagree	*Disagree*	*Neutral*	*Agree*	*Strongly Agree*

I felt that I was respected.

1	*2*	*3*	*4*	*5*
Strongly Disagree	*Disagree*	*Neutral*	*Agree*	*Strongly Agree*

The location of the training was appropriate.

1	*2*	*3*	*4*	*5*
Strongly		*Neutral*		*Strongly*

Disagree Disagree Agree Agree

Your prior knowledge and experience was valued.

1 2 3 4 5

Strongly Neutral Strongly

Disagree Disagree Agree Agree

The researcher was knowledgeable of the subject matter.

1 2 3 4 5

Strongly Neutral Strongly

Disagree Disagree Agree Agree

The importance of the subject matter was thoroughly explained.

1 2 3 4 5

Strongly Neutral Strongly

Disagree Disagree Agree Agree

The material was presented in a way that made it easy to understand.

1 2 3 4 5

Strongly Neutral Strongly

Disagree Disagree Agree Agree

A variety of different teaching methods were used to help get various points across.

1 2 3 4 5

Strongly Neutral Strongly

Disagree Disagree Agree Agree

An appropriate amount of time was devoted to each subject.

1 2 3 4 5

Strongly Neutral Strongly

Disagree Disagree Agree Agree

After participating in this research, I now feel I have more knowledge of my communication with my athletes.

1	*2*	*3*	*4*	*5*
Strongly		*Neutral*		*Strongly*
Disagree	*Disagree*		*Agree*	*Agree*

I felt I could use the strategies.

1	*2*	*3*	*4*	*5*
Strongly		*Neutral*		*Strongly*
Disagree	*Disagree*		*Agree*	*Agree*

You saw value in the program.

1	*2*	*3*	*4*	*5*
Strongly		*Neutral*		*Strongly*
Disagree	*Disagree*		*Agree*	*Agree*

I feel comfortable in performing these tasks on my own now.

1	*2*	*3*	*4*	*5*
Strongly		*Neutral*		*Strongly*
Disagree	*Disagree*		*Agree*	*Agree*

My trainer encouraged me to ask questions whenever there was something I did not understand.

1	*2*	*3*	*4*	*5*
Strongly		*Neutral*		*Strongly*
Disagree	*Disagree*		*Agree*	*Agree*

Feel I can contact the research if further needs or questions arise.

1	*2*	*3*	*4*	*5*
Strongly		*Neutral*		*Strongly*

Disagree *Disagree* *Agree* *Agree*

I see the value of this knowledge in this field.

1 *2* *3* *4* *5*

Strongly *Neutral* *Strongly*

Disagree *Disagree* *Agree* *Agree*

Any other comments?

Appendix G: Modified Communication Handbook

1st Edition

June 2019

Modified Communication Handbook

A basic starters guide for [redacted]

Kelsey Randrup
SPEECH & LANGUAGE THERAPIST

Introduction

This Handbook is a starting point for a better understanding of modified communication. The Handbook aims to give practical assistance to coaches who train athletes that qualify for the [redacted] population. It provides strategies supported by research and aims to present them in a practical way. This guide was inspired by the work of Speech and Language Therapists in the special education sector and by the passion that New Zealanders have for sport. By combining the strategies used in the special education sector and transferring them to the social and community settings that sports provide, we can aim to create a stronger base of understanding for the athletes we train. Additionally, we can improve our explicit communication knowledge as coaches.

Table of Contents

Communication Challenges

Introduction to specific impairments

Note that this section will not cover every disability and not ever challenge we have labelled below will apply. For this reason 'challenges' has the word 'potential' paired with it. The focus of this section will be to gain a better understanding of how specific impairments may impact your athlete. The disability focus will be on people with an intellectual disability and those who have impaired receptive language abilities, meaning they have difficulties in their understanding of language. See the 'Coaching Implications' headings later in this guide for specific strategies that may help you with particular athletes. You will find a lot of cross over information. The 'Coaching Implications' highlight different points that will be expanded upon in later sections. Many important aspects and challenges have been highlighted as they could impact your coaching and training sessions. However, this is not a complete list of challenges associated with the disabilities listed below, you may come across people with other disabilities not listed in the 'Quick Guide to Specific Disabilities'.

Autism Spectrum Disorder and Asperger's Syndrome

Cause: Unknown, suspected gene section mutation.

Facts: People with Autism Spectrum Disorder are often visual learners, Sixty-six percent have a mental health comorbidity, and many will have 'sensory'* needs. Asperger's Syndrome comes under the Autism Spectrum Disorder umbrella. People with Asperger's Syndrome have social communication challenges, may experience language difficulties, find figurative language challenging to understand and may, have poor eye contact and limited facial expressions.

Sensory needs refers to difficulties with our senses things that we process through our eyes, ears, mouth, nose and touch with our skin.*

Potential Challenges: People with ASD or Asperger's Syndrome may present with all or a combination of the following:

- reduced information processing speed,
- difficulty with spoken instructions and with spoken language in general,
- may prefer or require routine,
- difficulty making eye contact,
- social skills challenges,
- difficulty understanding tone of voice,
- difficulty understanding the emotions and facial expressions of others.
- reduced emotional or physical responsiveness,
- faster or slower rate of speech,
- processes sensory information differently

Coaching Implications: You can support your athlete with ASD or Asperger's Syndrome by using some or all of the following strategies:

- less words and more **visual communication systems,**
- **colour** to code different information,
- **visual schedules,**
- **repetition** of instructions and demonstrations,
- **literal language** (e.g. minimising use of idioms),
- **specific feedback,**
- **precise, concise, and clear speech.**

Down Syndrome

Cause: Chromosomal disorder that occurs because cells contain an extra chromosome number 21.

Facts: In New Zealand one baby in about 1000 is born with Down Syndrome; that is one or more babies with Down Syndrome born every week. It can occur in any family of any race, culture or religion. There is a relatively even split between boys and girls in the Down Syndrome population and there is wide range of physical, intellectual and communication abilities between individuals.

Potential Challenges:

- Low muscle tone,
- Hearing impairments,
- Intellectual disability,
- Difficulty using spoken language,
- Stronger understanding of language compared to language use.

Coaching Implications: You can support your athlete with Down Syndrome by using some or all of the following strategies:

- Check if they are hearing impaired and whether they use an FM system (microphone and speakers in their hearing aids or cochlear implants) to help them hear you better,
- Consider you **language use,** use **simple language**, be **clear, concise, and precise.**
- Use **visual language systems** to support spoken information.
- Use **repetition, specific feedback,** and **questioning.**

Fragile X Syndrome

Cause: It is a genetic disorder caused by a mutation in the FMR1 gene on the X chromosome, causing the FMR1 gene to be turned off. Roughly one in 260 women and one in 800 men are carriers for the gene that causes fragile X. It is estimated 1000 New Zealanders may be affected by Fragile X.

Facts: It affects one in 4000 individuals. It affects one in 3600 males and one in 5000 females. Can have a dual diagnosis often with Autism Spectrum Disorder or Fragile X Syndrome

Potential Challenges: Anxiety, social challenges, speech delays, intellectual disability, hyperactivity, and a short attention span. Poor eye contact. Obsessive compulsive disorder.

Coaching Implications: **visual schedules,** and other visual language systems will be useful. **Repetition** and routine. Simple **language use, clear, concise, and precise.**

Auditory Processing Disorder (APD)

Cause: The common causes are hereditary factors, birth-related factors, maturational delay, and glue ear (otitis media) in infancy or early childhood.

Facts: the brain has trouble processing sounds, despite the person having normal hearing function.

Potential Challenges: In the presence of other sound, or when listening to complex information or instructions, it can be hard to process information and focus. Processing time is required. Difficulty remembering spoken information. Fatigue. Behaviour challenges.

Coaching Implications: The **training environment, Language Use**, **visual communication supports, Clear, precise, and concise** and **visual schedules.**

Cerebral Palsy

Cause: damage to the brain before or at birth, often oxygen deprivation, "stroke like". Identified in childhood, usually at birth.

Facts: every 15 hours Aussie born with CP, massive variations person to person. Not all people with CP have an intellectual impairment.

Potential Challenges: Muscle coordination, their speech intelligibility, athlete's communication, fatigue.

Coaching Implications:

- The **training environment,**
- **Language Use**,
- **Visual communication** supports,
- **Visual schedules.**

Dyslexia

Cause: Unknown. Research shows that there are neurological differences – people with dyslexia have brains that are wired slightly differently from most. Tends to run in families.

Facts: Affects an estimated one in ten New Zealanders, including 70,000 schoolchildren.

Potential Challenges: information retention, understanding language, processing challenges.

Coaching Implications:

- **Repetition,**
- **Specific feedback,**
- **Visual schedules**
- **Visual communication** supports.

Intellectual Impairment/ Disability

Cause: There are more than 250 different causes, some possible causes are; genetic, acquired, congenital, developmental, environmental

Facts: Legally it must be identified before the age of 18. Due to chromosomes like many of the other disabilities listed here it is more likely to occur in males than females.

Potential Challenges: Difficulties with two or more adaptive skill areas, impaired short-term memory, other disabilities as well as intellectual impairment is common among this population. Easily distracted/ short attention span therefore are easily bored.

Coaching Implications:

- Modify communication, **literal language**, be patient, break skills and simple instructions, **clear, concise, and precise**.
- Skill **repetition** very important,
- Give **specific and direct feedback**,
- Modify the **training environment** to reduce distractions, be aware of specific medical conditions (i.e seizures).

Prada Willi Syndrome

Cause: Genetic, Chromosomal disorder, three genetic causes, deleted or unexpressed genes in the same region of chromosome 15

Facts: Prader-Willi Syndrome (PWS) is a rare and complex neurodevelopmental, genetic disorder which occurs in around 1 in 16,000 births and affects approximately 200 New Zealanders. Affects both male and female.

Potential Challenges: Low muscle tone, intellectual disability/ cognition, emotional regulation, growth, muscle development, metabolism, and appetite – most people with PWS are always hungry. Congenital hip dislocation, vision implications/ lack of eye control, small hands, and feet. Speech difficulties related to muscle movement. Anxiety.

Coaching Implications: Care around food, due to the obsession with food, speak to their primary care giver. **Visual schedules,** they can help to mitigate anxiety, use routines and **repetition**. **The training environment** should be as calm as possible to stop over arousal and elevated mood.

Some additional considerations

Hearing impairments- Can vary from auditory processing disorder and the range of severity within that, specific sound difficulties. Mild difficulties to profound Deafness. Using visual systems alongside your verbal communication can enable these athletes to participate.

For more information see: https://www.nfd.org.nz/

Colour Deficits- Attributes qualities such as hue, lightness and saturation affect the ability of people with congenital or acquired colour deficit to distinguish between colours. When preparing materials for people with colour deficits, remember that they will likely see less contrast between colours, they may have difficulties discriminating between colours of similar hue and their perception of lightness can be markedly different.

Visual impairments- Pairing communication types is recommended, for increased accessibility for your team. Visual systems will not be effective unless you are using specific high visual contrast systems. Verbal and tactile cues will be important for these athletes. Again, there is a range in impairment with people who have visual challenges, from colour deficits to partial/ mild vision impairment to total blindness.

For more information see: https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment

Physical limitations- Such as athletes who use wheelchairs, amputees, reduced range of motion, ataxia of movement, hypotonia reduced muscle tone, Les Autres Athletes (the others), leg length difference, limb deficiency, impaired muscle power or Athetosis. This might impact your instructions and the training environment. Consider what their physical ability is, and fatigue might impact their training.

Section Notes/ Goals

The Training Environment

Introduction

What is the training environment? This section is about the actual physical environment you train in. You may ask **why is** the **training environment** **important?** It is important to try and create an environment that is optimal for learning. If there is anything you can do to reduce distractions that could affect the training, try and do it. The environment is an important element for this population of athlete because of potential sensory implications. Many of our athletes are affected by over stimulation because of the way they process different sensations. Auditory or sound over stimulation is a big factor, as it makes it challenging for the athlete. There is an internal competition happening with sounds, and words. Not only do many of them deal with competing sounds but also with their physical or visual sensations. **For example,** it may be things such as the outdoor air/ wind, the water in a pool, the brightness, the colour of the walls, the feeling of the equipment or physical contact with another player. There is a lot going on and these relationships are complex as sensory information may be processed differently by different people.

It can be tricky as training times and spaces can be challenging to acquire. Sometimes we cannot do much to change the physical environment. We need to make the best out of the resources we have access to.

What can we do? It is worth taking the time to think about these external factors in our environment.

Ask yourself: *What factors might be affecting your athletes?*

Can something be done? Can they be eliminated, or minimalised by simple changes?

Section Notes

Language Use

Introduction

We change our language use all the time, from how we modify the way we communicate with elderly, being more formal, speaking loud and clear, to the way we communicate to babies. We speak differently when we talk to our boss compared to the way we would communicate with a friend using more slang or informal language. Much of this becomes automatic, it is ingrained because of upbringing and some of it is built into us. We cannot help but naturally soften and exaggerate our speech with babies. Culturally we have not always had the exposure, upbringing, or education around how we change our language with people who have communication differences. This section provides some tips about how you can change your language with your athletes to enable them to understand instructions better.

Tips

Use Literal Language

What is literal language? Literal language is to say the most direct meaning or saying exactly what you mean.

Why is literal language use important? Some people with intellectual disabilities, may struggle to understand the figurative meaning of a phrase.

Examples

Example 1: "Run straight"

Ryan the coach told Cameron (with Asperger's Syndrome) to "run straight", Cameron responded, he stood as tall as possible with his hands at his side with a straight back and locked knees. Ryan was confused… this is not what he had intended so what went wrong? There was a **communication breakdown***, Cameron understood the phrase "run straight" in its most literal form. To be physically 'straight' is to have an erect body posture, which is what Cameron had done. He was confused as to his coach's frustration with the action. What did his coach really mean? Well Ryan intended for "run straight" to encourage Cameron to move forward.

With conditions such as Asperger's Syndrome, Autism, and many other intellectual impairments, it is hard for people to derive the figurative meanings, slang terms or colloquialism of those everyday terms we use.

Example 2: "Hands up"

Angus was coaching Matthew, a young man with Autism. In a group session, Angus thought he'd give Matthew a verbal prompt so said "Hands up!" Matthew responded; he stretched his hands up as high as he could. The result was that the ball hit Matthew in the stomach and Angus was confused. Why had Matthew not put his hands in a ball receiving position? How was he supposed to catch a well delivered with his *hands up* above his head?

Matthew was not at fault in this situation. Nobody had told Matthew what the intended meaning of '*hands up'* was.

What can we the coach do? …..

What can we do?

Think about some of the phrases you use regularly in a training, write them down as you think about them.

Ask yourself:

What do my phrases mean literally?

How might these terms of phrase be misunderstood by my athletes?

Is there an alternative phrase?

If it is not possible to change the phrase, how can it be explained or demonstrated?

Language Delivery

What is **'language delivery'**? It is the way we speak, the volume, the rate/pace of our speech, the way we vary our voice and even how we speak, for example with and accent or with expression and how we are using our body position. Can the other person or people see our mouth? Are we giving them enough time to process the information?

Why is **'language delivery'** important? Because communication goes two ways, and if the message is not received by one half of the conversation then a break down occurs. In this case it is easier for our listeners to become confused during conversations. They may also have a different processing speed to us, so our speech rate and clarity is very important. If the information we wish to convey is not understood our athletes will not reach their full potential.

Representation of what it is like for a speech rate example: Try and read this.

It’shardtodecipherthismessageaswrittenlanguageisadifferentmodalityfromspoken

.

Howeverthisexampleshowswhatitislikeinsidethebrainwhenamessageistoolongort

oofast,thebrainstrugglestobreakthesequenceintowordfragments.

How was the reading, did you understand the message? Did it take you longer to process the language delivery?

What can we do?

Ensure our instructions are **precise, concise,** and **clear,** help with visual cues and make sure your face is visible. Make sure the rate of your speech is appropriate and allows for the processing time of your athletes.

Body Language

What is **body language**? How can we use our body to support our language?’

Why is body language important? Because it can help us convey a message. However, things such as facial expressions can be challenging for some of our athletes to understand, so it is important to consider our position, proximity, and gesture, making sure we can be seen when we are communicating.

Tips: Face your athletes when speaking to them. Be aware of where additional noise is coming from in your environment. Position yourself in a way that allows them to read visual cues and expressions. Accompany your words with physical gesture.

Section Notes/ Goals

Repetition

Introduction

What is *repetition*? Repetition is the act of repeating, doing, saying, or writing something again; repeated action, performance, production, or presentation *(dictionary.com).* It is generally used in sport to highlight an important goal for the team or important skills to master. Things that are important and essential tend to be repeated. Repetition can occur within an activity/ drill, across a training, or across a season (even across multiple seasons).

Why is *repetition* important? Because of how our brains learn. We learn through repetition, the more we repeat an action or concept the better it is stored in our brain. Our brain pathways become stronger every time we repeat until actions become more automatic and concepts are retrieved quickly. In the [redacted] population repetition is of particular importance because the pathways in some people's brains may not be as receptive and may take longer to build and strengthen. Therefore, a greater level of repetition is required.

What does *repetition* look like? Repetition can be across an activity, a training, or a season in the more short-term view. Likely the most common representation of repetition in the sports context is through drill. Drill learning is a repetitive skill-based exercise for technique development/ skill learning. Another way we commonly use repetition in training is through verbal instructions and verbal feedback. For example, each time we introduce a drill, we are repeating instructions. That could be seasonal repetition: a theme or goal for your team across the season.

Repetition Types

Feedback is a way in which we use repetition. Feedback is something we use often as coaches; it is important to be specific, particularly in the [redacted] context. This helps to reiterate the concept and consolidate it into the brain's pathways, getting stronger after every repetition. This applies to verbal and written forms. Feedback should be specific, **for example:** "great follow through", "I like how you turned your head to breathe". Let your feedback specify the target skill or the target behaviour. Ending a session with some positive feedback can help the athletes feel positive about the session even if it was not their best performance. It is important for athletes to feel success in a session for a few reasons. We want people participating in sport and enjoying the session obviously, but it is also a way to reinforce the desired behaviour or skill.

Another verbal form of **repetition** is **questioning**. **Questioning** consists of asking a team member to explain the drill or to reiterate the instructions you as the coach have given. This can test their understanding of the instruction/s, skill or desired behaviour. If it is a drill you have done before ask one of your athletes if they are able to explain the drill in a session. You can give them a sense of importance and leadership by doing this, as well as testing their retention.

Other ways we **repeat** can include **gestural or visual systems** (which will be talked about more later) they are another way we can repeat a concept or idea, just using a different medium. This can be done through the actions we create, physical demonstrations (either direct or indirect), written instruction (using easy read principles), drawings, realistic images, booklets, pamphlets, and visual lanyards etc. A useful thing to consider when you are working with people who are *visual learners*.

Indirect and direct physical demonstrations/ modelling: These forms of demonstration/ gesture listed below can be used as a form of **repetition** also.

-A direct physical demonstration is doing the real activity in the actual context, a literal demonstration.

-An Indirect physical demonstration is when your demonstration demonstrates the action outside of the actual direct context of the action. **For example,** pretending to pass a ball, demonstrating a swim stroke outside of the pool or pretending to kick a ball.

Mirroring activities/ copycat: These activities do not work in every sport; however, they can be useful for a direct model of the expected task. Modelling and mirroring activities are another way we can use **repetition,** to help solidify an action. For **example**, these activities are when you have people facing each other doing the same activity, where they are essentially visually modelling the skill for one another. They can see what the person opposite is doing and copy the action.

TIP: Repetition needs to be done in multiple ways to encourage the target skill to be generalised.

TIP: Try and use multiple strategies of **repetition** in a training, to help generalise the skill for multiple settings.

TIP: A direct physical demonstration is always preferred. It is like literal language use. If we are using the literal action in its correct context this will make the most sense for our athletes.

Section Notes

Visual Communication & use of Visual Systems

Introduction

Often a verbal system (talking) is not the most effective for communicating with our population of athletes. Depending on many influences, their understanding of the language we use, the delivery, clarity and pace that we communicate using. Other things that can impact it include processing speed and sensory or auditory perception challenges. This can be quite overwhelming for someone, with the added expectation of having to comply with instructions. Therefore, this section is loaded with modalities and ideas around visual communication and visual systems, all very user friendly, with little to no cost. Take your time to read through and make notes as you go, as this section is very important.

Visual Systems

Physical demonstrations: indirect and direct- are a visual communication strategy. That can show someone visually how to do an activity. A direct physical demonstration is always the preferred option.

-An Indirect physical demonstration is when your demonstration demonstrates the action outside of the actual direct context of the action. **For example,** pretending to pass a ball, demonstrating a swim stroke outside of the pool or pretending to kick a ball.

- A direct physical demonstration is doing the real activity in the actual context, a literal demonstration. Much like the preference for literal language use it is easier to comprehend when you are showing the activity/ skill in its functional context. If you are unable to do a direct physical demonstration then think

outside the box, use one of your athletes to demonstrate, ask a volunteer or assistant coach, maybe even your manager.

Visual Schedule- Visual Schedules are brilliant for reducing anxiety. They are a timetable for the training. A visual schedule gives the athlete the run through of the session. It uses visuals to appeal to visual learners and can be accompanied by words. It can help support athletes with short attention spans. Continue to refer to this throughout the training, before and after activities, you can tick them off or use velcro strips or blu tack and rip off the activity when it is completed. You can use visual schedules as a behaviour management strategy. By allocating a "your choice activity" for a duration of time, to award them for their attention, participation, or hard work. This does not have to be free time but could be more like guided selections. It could be a selection of activities you have provided, which also allows them to feel as though they have independence.

Gesture Use- This is a non-formal form of using sign language or a Makaton system. It may be that some signs we create naturally for different things are part of a formal sign system without our inherent knowledge or a formal understanding of a sign language system. Gestures can be useful and can lead into the indirect physical demonstrations we talked about earlier. For **example**; us putting our hands up into ball catching position to demonstrate the action to our athletes without the use of a ball or in the process of the direct action of receiving a pass. Gestures may also be as simple as signalling "come in" where you usher your arms towards yourself to gather the team. Or signalling stop with placing your palm outwards in the direction or towards the person the gesture signal is intended for.

Social Stories- Social stories are something used effectively with people who struggle to read expression, understand emotions and feelings or struggle with the appropriateness of a particular thing. Some people can get upset or emotionally elevated when things don't turn out the way they want. For **example**, all Claire wants to do is play Goal Shoot and she has to play another position to allow someone else to have a turn. A social story could be used to explain this to her and prepare her for that change.

Communication Books and Core Boards- Communication books are useful tools for low technology communication. Communication books can be a simple format (it has a cross over with easy read which is described below) a page might have a series of images related to specific topic or activity. These can be used with athletes who do not speak (non-verbal) to allow them to convey meaning to you. You can use these images to accompany your verbal language, meaning you can point to the key symbols that relate to your instructions. More complex boards have a wider variety of symbols and language, describing words, questions words and personal pronouns (such as 'I', 'She', 'Me' etc). This might help some of your athletes. Simple boards specific to your activity may be appropriate.

A full coreboard might not be appropriate for your population. Instead they can use less squares making it simpler and more specific to your training or sport. The more you use it along with your verbal language the faster you will become with navigating the system. Your communication book would consist of fewer squares in and easy flip format that might target specific skills on each page.

Sign Language/ Makaton Language- these are both language systems that aid not only Deaf athletes or hearing-impaired athletes but also those who require a visual support system and a simplified language system. Verbal language systems though being the most common aren't always the most

effective for populations of people with different abilities. Some people need the accompaniment of a visual support with the verbal information to aide processing. Though not all people understand these systems.

Visual Lanyards- **Visual Lanyards** are useful for quick access and short phrases, things you want to communicate quickly. Often, they are just one-word reminders and are generally accompanied by a visual, i.e: a picture or image of something. You would have a group of visuals printed in single block spaces one behind another. They might have simple quick reminders for basic instructions or questions. These become easier to use with frequency of use. Things you might have on it could be, Wait, Stop, Listen, Toilet, Water, I need a break, etc.

Visual Lanyards can be very useful for your non-verbal athletes or athletes with limited verbal communication. Using some basic symbols to accompany your instructions such as a "stop" visual or a finished visual can help your meaning to be understood faster in those athletes with difficulty in processing verbal instructions.

Video- Video is an effective tool that can help your athletes see themselves doing an activity or it can be used to show them somebody else doing the activity. The video needs to have a theme or a target. It should be short no longer than 5 to 10 minutes and should include closed captioning. Videos should also include a mixture of visual examples and text. Videos are more effective if they are videos of the athlete you are wanting to teach the skill, if they can see themselves doing the action correctly it can help them

self-model. If you are unable to get a video of your athlete doing the skill correctly it can also be effective having a video of someone they know doing the skill correctly. Such as you, an assistant/ helper, a sibling or parent, or another team member who is of a higher skill level.

Use of Colour- Colour is a powerful source of symbolism and imagery, we associate colour with meaning. For **example**, we know the colour **red** means stop, this is a universal symbol and that the colour **green** means go. Fire colours such as **orange, red** or **yellow** with danger or caution. We can use this to our advantage in sports too, having **red** cones to mark the boundaries of field space. A **blue** coned area could be used as a cool down space for athletes who need to self soothe or calm down. They may need some time out of training to settle down from an elevated level of arousal. We can also use colour to help us gauge how an athlete is feeling before training, through the **zones of regulation**. This gives us a clue to how this might impact their performance in the training. Please see additional information to learn more about **zones of regulation**.

Easy Read - What is easy read? Easy read was developed to support people with learning/ intellectual disabilities to enable them to better understand written information. It presents written information clearly, making it easy to read and understand. Easy read is useful for people with low literacy levels, people who use English as a second language, elderly and the Deaf population. It is written information supported by pictures. Importantly it uses no jargon terms or acronyms.

Whiteboards- avoid making white boards too busy and avoid using acronyms, jargon, and abbreviations. They can be a useful way to reinforce the session outlines, just as a visual schedule does. They can also be helpful for reinforcing expectations, goals, or rules in a session. Think about the language use in written language as well as verbal language. Also consider aspects of ***easy read*** when you are using written language.

Things to think about: *Do we have a naughty athlete or are they just misunderstanding the instructions?*

What does their behaviour look like?

Section Notes

Holistic Considerations/ The Social Model

Introduction

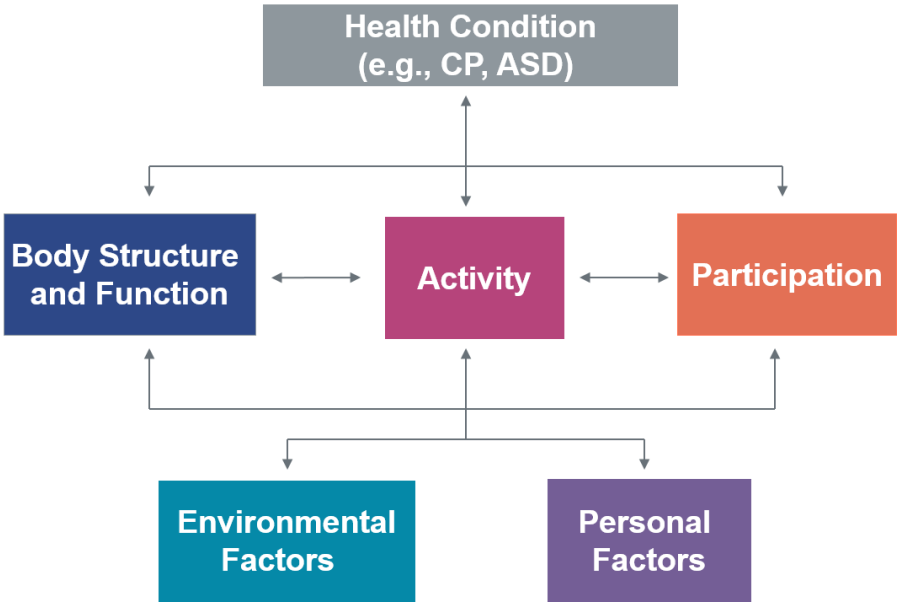
A social model is a model which considers multiple factors of influence to a person's health, learning or wellbeing. A social model demonstrates the understanding that a person is influenced by many things and this concept is valuable for recognizing how that can impact our coaching, teaching or treatment of an individual in a variety of contexts. Social models guide us to consider what we should do to aide our athletes in the best possible way.

Social Models

This section should tie together the underlying concepts and themes from the previous sections. One framework that is used internationally is the International Classification of Functioning or ICF. The ICF was designed by the World Health Organization. It is used to get a holistic understanding of the person. The models below consider things such as social health or personal factors which may include the parents or caregivers. This relationship hasn't been explored much in the research however it must be said that relationships with our athletes and where possible their parents is another important component of our work as it helps us learn more in this complex population and build community and culture around our athletes. The models are outlined below.

International Classification of Functioning (ICF) Framework

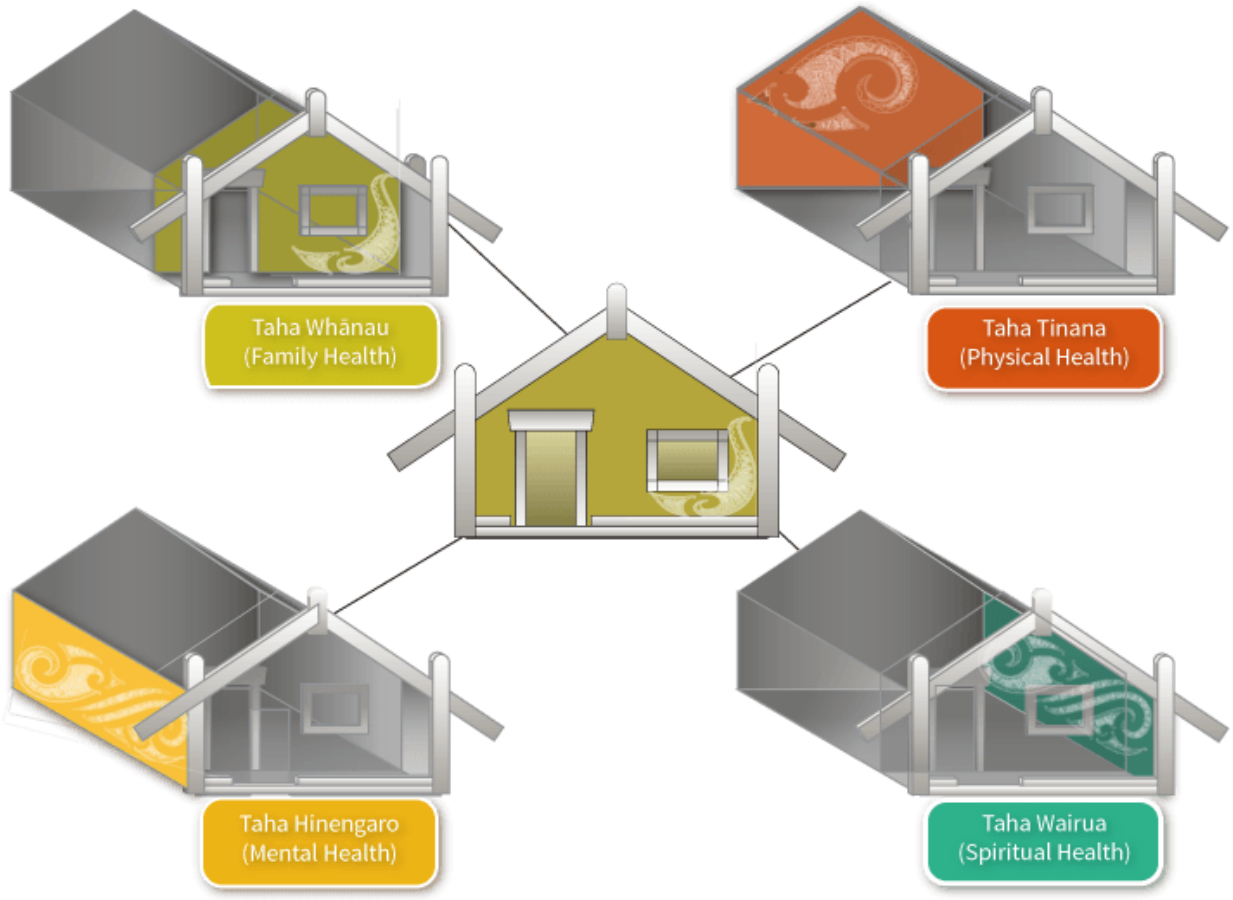
(World Health Organization, 2002)



Te Whare Tapa Whā

Ministry of Health (2014)

Another model widely used in New Zealand is Te Whare Tapa Whā. Te Whare Tapa Whā was born from the Māori philosophy of Hauroa, it focuses on four components of wellbeing. Those components are; Spiritual, Physical, Mental/ Emotional, and Social/ family.



Tip: A useful way to look at all of the sections is to think about the positives and negatives of each.

Ask yourself, or external influences on the person e.g: their family, 'what enables them?' and 'what is a limitation for them?'. Every person you encounter is influenced by multiple components of being.

Section Notes

Personal Communication Goals

What did you learn?

What will you take away with you?

Incorporation Prompts

Repetition	Easy Read	Video Modelling

Questioning		
Use of colour Feelings	Social Model	Direct Physical Demonstration
Use of colour	Literal Language Use	Visual Lanyards
Repetition Feedback	The Training Environment	Communication Book/ Coreboard
Social Story	Gesture Use	Sign Language or Makaton Sign

Cut these out! Use the ones relevant to your group of athletes. Use them as a tool to encourage your use of the modified communication strategies. If using all of them at once is too overwhelming use these to allow you to set goals and integrate the techniques one at a time. Think about what helps and what does not.

Additional Resources

Autism Spectrum Disorder:

- https://www.kidshealth.org.nz/autism-spectrum-disorder-asd
- https://www.health.govt.nz/your-health/conditions-and-treatments/disabilities/autism-spectrum-disorder
- https://www.altogetherautism.org.nz/what-is-autism/

Asperger's Syndrome:

- https://www.medicalnewstoday.com/articles/7601.php
- https://www.healthline.com/health/asperger-syndrome

Down Syndrome:

- http://www.nzdsa.org.nz/whatis.htm
- https://www.kidshealth.org.nz/down-syndrome-parents-story-videos
- http://www.downsyndrome.org.za/main.aspx?artid=67
- https://www.ndss.org/resources/speech-language-therapy/

Prada Willi Syndrome:

- https://www.pws.org.nz/

Fragile X Syndrome:

- https://www.lifeunlimited.net.nz/1-for-whanau-family-carers/understanding-fragile-x/
- https://www.cinch.org.nz/categories/a-z/f/1756/entries/4286

Auditory Processing Disorder:

- https://www.soundskills.co.nz/Auditory%20Processing%20Disorder/Auditory_Processing_Disorder.html

www.emcentre.ac.nz will be releasing guidelines for APD on the 29th of August 2019!

- https://www.emcentre.ac.nz/2019/08/04/launch-of-the-new-zealand-guidelines-for-auditory-processing-disorder-29-august-2019/?fbclid=IwAR1QXrEGxxjXQyr9xUH-79EYNreoTygMX6yoMc1_nBa-iR8x4Dy7M84pmTc
- https://kidshealth.org/en/parents/central-auditory.html

Intellectual Impairment:

- https://www.specialolympics.org/about/intellectual-disabilities/what-is-intellectual-disability
- https://www.psychiatry.org/patients-families/intellectual-disability/what-is-intellectual-disability
- https://achieveaustralia.org.au/disability-services/intellectual-impairment/
- https://www.brighthubeducation.com/special-ed-learning-disorders/73324-improving-adaptives-skills-in-students-with-intellectual-disabilities/
- https://www.asha.org/Practice-Portal/Clinical-Topics/Intellectual-Disability/

Cerebral Palsy:

- https://cerebralpalsy.org.nz/cerebral-palsy/
- https://www.southerncross.co.nz/group/medical-library/cerebral-palsy-causes-symptoms-life-expectancy

Dyslexia:

- http://www.dyslexiafoundation.org.nz/d_assessment.html
- https://www.speld.org.nz/specific-learning-disability-definitions
- https://www.dyslexia.com/about-dyslexia/signs-of-dyslexia/test-for-dyslexia-37-signs/

The Training Environment/ the learning environment:

- https://phdessay.com/inclusive-education-the-intrinsic-and-extrinsic-barriers-to-learning-and-development/

- https://newyorkessays.com/essay-the-intrinsic-and-extrinsic-barriers-to-learning-and-development/
- https://www.youtube.com/watch?v=wutIaSf37lI
- https://onlinelibrary.wiley.com/doi/abs/10.1002/tea.21315

. ***Literal Language:***

- https://www.enotes.com/homework-help/what-difference-literal-language-and-figurative-128439
- http://csd.wp.uncg.edu/wp-content/uploads/sites/6/2013/04/Lee_Kamhi_19901.pdf
- https://pdfs.semanticscholar.org/6b73/fb05ab9e369c036dda2eb63a92cab2fe975f.pdf

Language Use:

- https://www.urmc.rochester.edu/childrens-hospital/developmental-disabilities/conditions/language-disorders.aspx

Body Language:

- https://www.verywellmind.com/understand-body-language-and-facial-expressions-4147228

Repetition:

- https://aplnexted.com/blog/best-practices-for-teaching/Focus-and-Repetition-in-Learning
- https://medium.com/peak-wellbeing/the-reason-for-repetition-how-repetition-helps-us-learn-10d7eea43e95

- http://digemy.com/repetition-in-learning/
- https://www.parents.com/health/special-needs-now/kids-with-autism-need-more-than-repetition-and-drills/
- http://www.thespeechdynamic.com/what-is-that/?fbclid=IwAR2BxDg07aLneQgmgnk8yL1YAZ7c43Ve_9pgszbrc3-LG_7ZwmDVGl9_i68

Questioning:

- https://teachingcenter.wustl.edu/resources/teaching-methods/participation/asking-questions-to-improve-learning/
- http://ctet.royalroads.ca/using-questions-instruction

Feedback:

- https://www.teachthought.com/pedagogy/20-ways-to-provide-effective-feedback-for-learning/
- https://speech-language-therapy.com/index.php?option=com_content&view=article&id=71

Visual Systems & Gesture:

- https://socialmettle.com/gestures-in-communication
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3642279/
- https://www.helpguide.org/articles/relationships-communication/nonverbal-communication.htm
- https://www.independent.co.uk/news/science/how-hand-gestures-aid-understanding-122510.html

Physical Demonstration/ Modelling:

- https://classteaching.wordpress.com/2018/12/05/i-we-you-a-simple-approach-to-modelling/
- https://classteaching.wordpress.com/2017/05/18/why-modelling/
- https://alyceeduproject.wordpress.com/1-teaching-strategy-1-demonstration/

Mirroring Activities/ Copycat:

- http://psychlearning.com/mirroring-imitating-modeling/

Physical Demonstrations:

- https://us.humankinetics.com/blogs/excerpt/employing-effective-teaching-tactics
- https://www.brianmac.co.uk/coachsr.htm

Sign Language and Makaton Sign:

- https://leader.pubs.asha.org/doi/10.1044/leader.RIB1.19112014.14

Social Stories:

- https://carolgraysocialstories.com/social-stories/

Visuals, in lanyards and communication books:

- https://talklink.org.nz/resources/using-a-large-core-board
- https://usevisualstrategies.com/visual-strategies-autism/
- https://www.autism.org.uk/about/strategies/visual-supports.aspx
- https://www.autismspeaks.org/sites/default/files/2018-08/Visual%20Supports%20Tool%20Kit.pdf

Video Modelling:

- https://raisingchildren.net.au/autism/therapies-guide/video-modelling
- https://autismpdc.fpg.unc.edu/sites/autismpdc.fpg.unc.edu/files/imce/documents/VideoModeling_Complete.pdf

Use of Colour:

- http://www.zonesofregulation.com/index.html

Search @zonesofregulation on facebook

Easy Read:

- https://www.odi.govt.nz/guidance-and-resources/a-guide-to-making-easy-read-information/

Some easy read examples from the United Kingdom NHS:

- https://www.england.nhs.uk/learning-disabilities/about/resources/er/
- https://www.england.nhs.uk/wp-content/uploads/2015/10/ld-net-plan-er.pdf

For Social Models:

- Ministry of Culture and Heritage. Te Ara – the Encyclopaedia of New Zealand. (2014). Mäori health: te whare tapa whä model (2nd of 2). Retrieved from www.teara.govt.nz/en/diagram/31387/maori-health-te-whare-tapa-wha-model.

- World Health Organization. (2002). Towards a Common Language for Functioning, Disability and Health ICF. Retrieved from, https://www.who.int/classifications/icf/icfbeginnersguide.pdf

Other social models you can search

- ICF-CY
- The Maori Philosophy of Haora
- Whāia Te Ao Mārama
- Te Whare Tapa Whā
- Te Wheke
- Te Pae Mahutonga